



IMPERIAL INSTITUTE  
OF  
AGRICULTURAL RESEARCH, PUSA.



JOURNAL  
OF THE  
ROYAL HORTICULTURAL SOCIETY

ESTABLISHED  
A.D. 1804



ROYAL CHARTERS  
A.D. 1809, 1860, 1899, 1929

EDITED BY  
F. J. CHITTENDEN, F.L.S., V.M.H.

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VOL. LXI.

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1936

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LONDON:  
THE ROYAL HORTICULTURAL SOCIETY, R.H. HALL, VINCENT SQ., S.W.

*The publishing day of this Journal is the 4th day of each month.*

Printed for the Royal Horticultural Society  
BY  
SPOTTISWOODE, BALLANTYNE & CO. LTD., COLCHESTER, LONDON AND ETON

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## NOTICE TO BINDER.

Volume LXI has been issued in twelve parts. Parts 2 to 12 each consist of the "Journal" proper, paged with Arabic figures, and "Extracts from the Proceedings," paged with Roman figures. The title and contents should be placed first, and be followed by Part I and the following eleven parts of the "Journal" proper, then the eleven parts of "Extracts from the Proceedings."

# JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

Vol. LXI



Part I

January 1936

## CALENDAR, 1936.

**NOTE 1**—Meetings of the Society are held, with very few exceptions, on alternate Tuesdays throughout the year, accompanied on each occasion by a Show of horticultural produce. All meetings, except the Great Spring Show at Chelsea take place at the Society's Halls. Fellows' tickets admit to all the Shows mentioned in this Calendar (but see Chelsea—first day)

The price of admission for Non-Fellows to the ordinary Fortnightly Meetings is:

For two-day Shows, 2s 6d on the first day, up to 6 P.M.  
1s 0d „ „ after 6 P.M.  
1s 0d on the second day.

For one-day Shows, 2s 6d all day

A fully-licensed Restaurant is available for Fellows and friends

**NOTE 2**—Fellows are particularly requested to note the time to which Shows are open on the first day of the two-day Shows, namely 7.30 P.M.

**NOTE 3**—The following Committees meet on the first day of all Fortnightly Meetings.

Orchid Committee . . . . .	11.45 A.M.
Fruit and Vegetable Committee . . . . .	12 NOON
Floral A Committee . . . . .	12.15 P.M.
Floral B Committee . . . . .	12.15 P.M.
Library Committee . . . . .	3.30 P.M.
Scientific Committee . . . . .	4 P.M.

Days and times of other meetings of Committees so far as fixed are given in the Calendar.

### JANUARY

		Time
13	Entrées for General and Teachers' Examinations close.	
14	Fortnightly Meeting. Flowers in season. Cyripediums . . . . .	1-5 P.M.
	Lecture by Mr Russell Page (Institute of Landscape Architects) on "The Influence of Climate on Garden Design" . . . . .	3.30 P.M.
28	Fortnightly Meeting. Flowers in season. Special exhibit from Wisley Winter Stages of Pests and Diseases of Fruits and other Plants Cyripediums . . . . .	1-5 P.M.
	Lecture by Mr A. D. C. Le Sueur on "The Care of Old Trees" . . . . .	3.30 P.M.

FEBRUARY		Time.
1	Entries for National Diploma in Horticulture Examinations close.	
11	Fortnightly Meeting. Flowers in season . . . Narcissus and Tulip Committee . . .	1-5 P.M. 11 A.M.
	Lecture by Mr. E. A. Bowles on "Crocuses" . . .	3.30 P.M.
25	Fortnightly Meeting. Flowers in season . . . Narcissus and Tulip Committee . . . Joint Rhododendron Committee . . .	1-7.30 P.M. 11 A.M. 11.15 A.M.
	ANNUAL GENERAL MEETING . . .	3 P.M.
26	Second day of Meeting . . .	10 A.M.-5 P.M.
MARCH		
6	Entries for Chelsea Show close.	
10	Fortnightly Meeting. Flowers in season. Cymbidiums . . . Narcissus and Tulip Committee . . . Joint Rhododendron Committee . . .	1-7.30 P.M. 11 A.M. 11.15 A.M.
	Lecture by Capt. Kingdon Ward on his expedition to the Patkoi Mountains . . .	3.30 P.M.
11	Second day of Meeting . . . *Demonstration at Wisley (weather permitting): Seed Sowing—Indoors and Outdoors . . .	10 A.M.-5 P.M. 2-4 P.M.
12	*Second day of Demonstration . . .	2-4 P.M.
18	General Examination in Horticulture (Seniors and Juniors). *Demonstration at Wisley (weather permitting): Rose Pruning . . .	
19	*Second day of Demonstration . . .	2-4 P.M.
24	Fortnightly Meeting. Flowers in season . . . Narcissus and Tulip Committee . . . Joint Rhododendron Committee . . .	1-7.30 P.M. 11 A.M. 11.15 A.M.
	Lecture by Mr. C. H. Rigg on "Growing Roses under Glass" . . .	3.30 P.M.
25	Second day of Meeting . . .	10 A.M.-5 P.M.
28	Teachers' Examination in School and Cottage Gardening.	
APRIL		
4	London Gardens Society. Exhibition of Spring Flowers (Old Hall) . . .	1-7 P.M.
6	Entries for British Floral Art Diploma Examination close.	
7	Fortnightly Meeting. Flowers in season . . . Narcissus and Tulip Committee . . . Joint Rhododendron Committee . . . Joint Iris Committee . . .	1-7.30 P.M. 11 A.M. 11.15 A.M. 12.45 P.M.
	Lecture by Mr. N. K. Gould on "Newer Primulas" . . .	3.30 P.M.
	Alpine Garden Society's Show (Old Hall) . . .	1-7.30 P.M.
8	Second day of Meeting and of Alpine Show . . . Lecture by Mr. R. W. Wallace (Institute of Landscape Architects) on "Water Gardens and Waterside Planting" . . .	10 A.M.-5 P.M. 3.30 P.M.
	*Demonstrations at Wisley (weather permitting): (1) Spring Spraying of Fruit Trees, (2) Shrub Pruning . . .	2-4 P.M.
	Entries for Early Market Produce Show close.	
9	*Second day of Demonstrations . . .	2-4 P.M.
11	Entries for Daffodil Show close.	
16	DAFFODIL SHOW. (See special schedule) . . .	1-7.30 P.M.
(Thurs.)	Early Market Produce Show (Old Hall). (See special schedule.) Special exhibit from Wisley Pests and Diseases of Daffodils.	

\* Fellows wishing to attend these Demonstrations should inform the Director, R.H.S. Gardens, Wisley, Ripley, Surrey, beforehand, mentioning the day.

		<i>Time.</i>
APRIL		
16	Fruit and Vegetable Committee . . .	12 NOON
(Thurs.)	Narcissus and Tulip Committee . . .	12 NOON
	Lecture by Mr. H. V. Taylor on "Vegetables for Pickling" . . . . .	3.30 P.M.
17	Second day of Shows . . . . .	10 A.M.—5 P.M.
(Fri.)		
21	<b>Fortnightly Meeting.</b> Flowers in season. Odontoglossums. National Auricula and Primula Society's Show. Sewell Medals for Alpines . . . . .	1-7.30 P.M.
	Narcissus and Tulip Committee . . . . .	11 A.M.
	Joint Rhododendron Committee . . . . .	11.15 A.M.
	Joint Iris Committee . . . . .	12.45 P.M.
	Lecture by Mr. E. R. Carter on "Carnation Growing for the Amateur" . . . . .	3.30 P.M.
	British Carnation Society's Show (Old Hall) . . . . .	1-7.30 P.M.
	Joint Perpetual-Flowering Carnation Committee . . . . .	12 NOON
	Lily Group Discussion: "Fritillaries" (Restaurant, Old Hall) . . . . .	4.30 P.M.
22	Second day of Meeting and Carnation Show . . . . .	10 A.M.—5 P.M.
25	National Diploma in Horticulture. Written Examination.	
28	Rhododendron Association's Show. Rhododendrons only (New Hall) . . . . .	1-7.30 P.M.
	Joint Rhododendron Committee . . . . .	12.15 P.M.
	Floral Committee B . . . . .	12.15 P.M.
	Trial of Lawn and Garden Sprinklers at Wisley.	
29	Second day of Rhododendron Show . . . . .	10 A.M.—5 P.M.
MAY		
5	<b>Fortnightly Meeting</b> (Old Hall) . . . . .	1-7.30 P.M.
	Narcissus and Tulip Committee . . . . .	11 A.M.
	Joint Rhododendron Committee . . . . .	11.15 A.M.
	Joint Iris Committee . . . . .	12.45 P.M.
	<b>ALPINE SHOW</b> (New Hall). Special schedule. Sewell Medals for Alpines . . . . .	1-7.30 P.M.
	Conference on Alpine Plants . . . . .	3-5 P.M.
	Introductory Address by the President.	
	Rock Gardening of Different Periods in Different Countries.	
	The Rise of Modern Rock Gardening and its Future.	
6	Second day of Fortnightly Meeting, Alpine Show and Conference . . . . .	10 A.M.—5 P.M.
	Conference—Morning Session . . . . .	11 A.M.—1 P.M.
	Utilization of Natural Slopes.	
	Utilization of Flat Sites.	
	Conference—Afternoon Session . . . . .	2.30-5 P.M.
	Cultivation of Rock Plants; General.	
	Difficult Plants.	
	Conference Dinner in Restaurant, New Hall . . . . .	7.15 for 7.30 P.M.
7	Conference—Morning Session . . . . .	11 A.M.—1 P.M.
	Rock Gardening in Sunny Countries.	
	South Africa.	
	California.	
	Conference—Afternoon Session . . . . .	2.30-5 P.M.
	The Alpine House.	
	Propagation.	
	(Visits to gardens will be arranged. Particulars on application.)	
11	British Floral Art Diploma. Written Examination.	
19	<b>CHELSEA SHOW.</b> Royal Hospital Gardens. (See special schedule.) Admission of Fellows by special invitation only . . . . .	4 P.M.
(Tues.)	Orchid Committee . . . . .	2.30 P.M.

		<i>Time.</i>
MAY		
19	Narcissus and Tulip Committee . . . . .	3 P.M.
(Tues.)	Joint Iris Committee . . . . .	3 P.M.
	Joint Rhododendron Committee . . . . .	3 P.M.
	Fruit and Vegetable Committee . . . . .	4 P.M.
	Floral A Committee . . . . .	4 P.M.
	Floral B Committee . . . . .	4 P.M.
20	<b>CHELSEA SHOW.</b> Royal Hospital Gardens.	
(Wed.)	Private view for holders of Fellows' tickets only . . . . .	8 A.M.-12 NOON
	Public admitted from noon . . . . .	12 NOON-8 P.M.
21	<b>CHELSEA SHOW.</b> Royal Hospital Gardens.	
(Thurs.)	Private view for holders of Fellows' tickets only . . . . .	8-10 A.M.
	Public admitted from 10 A.M. . . . .	10 A.M.-8 P.M.
22	<b>CHELSEA SHOW.</b> Royal Hospital Gardens . . . . .	9 A.M.-5 P.M.
(Fri.)		
JUNE		
4	Iris Society's Show . . . . .	1-7.30 P.M.
	Joint Iris Committee . . . . .	2.15 P.M.
5	Second day of Iris Show . . . . .	10 A.M.-5 P.M.
9	Fortnightly Meeting. Flowers in season. Sewell Medal for Alpines . . . . .	1-7.30 P.M.
	Joint Rhododendron Committee . . . . .	11.15 A.M.
	Joint Delphinium Committee . . . . .	11.15 A.M.
	Joint Iris Committee . . . . .	12.45 P.M.
	Lecture by Mr. O. C. A. Slocock on "Rhododendrons for the Garden" . . . . .	3.30 P.M.
	Lily Group Discussion: "Lilies in Japan" (Restaurant, Old Hall) . . . . .	4.30 P.M.
10	Second day of Meeting . . . . .	10 A.M.-5 P.M.
	A Debate (Institute of Landscape Architects) on "The Future of Gardening" . . . . .	3.30 P.M.
12	Teachers' Advanced Practical Examination at Wisley.	
15-19	National Diploma in Horticulture. Preliminary Practical Examination at Wisley.	
17-18	British Floral Art Diploma. Practical Examination.	
23	Fortnightly Meeting. Flowers in season, and London and South of England Viola and Pansy Society's Show . . . . .	1-7.30 P.M.
	Joint Rhododendron Committee . . . . .	11.15 A.M.
	Joint Delphinium Committee . . . . .	11.15 A.M.
	Joint Iris Committee . . . . .	12.45 P.M.
	Lecture by Mr. E. Markham on "Climbing Plants" . . . . .	3.30 P.M.
	Cactus and Succulent Society's Show (Old Hall) Entries for Amateurs' Flower Show close.	1-7.30 P.M.
24	Second day of Meeting and Shows . . . . .	10 A.M.-5 P.M.
23-26	National Diploma in Horticulture. Final Practical Examination at Wisley.	
30	Amateurs' Flower Show. (See special schedule.) Special exhibit from Wisley: Pests and Diseases . . . . .	1-7 P.M.
	Joint Rhododendron Committee . . . . .	11.15 A.M.
	Joint Delphinium Committee . . . . .	11.15 A.M.
	Orchid Committee . . . . .	11.45 A.M.
	Floral A Committee . . . . .	12.15 P.M.
	Floral B Committee . . . . .	12.15 P.M.
	Joint Iris Committee . . . . .	12.45 P.M.
JULY		
2	British Delphinium Society's Show (New Hall)	1-7.30 P.M.
(Thurs.)	National Sweet Pea Society's Show (Old Hall)	1-7.30 P.M.
	Joint Delphinium Committee . . . . .	12.15 P.M.
4	Lily Group Visit to Gardens of Lord Swaythling, Townhill Park, and Professor E. S. Lyttel, Nyewoods, Chilworth, Southampton. (Particulars from the Secretary.)	



		<i>Time.</i>
JULY		
7	<b>Fortnightly Meeting.</b> Lilies and flowers in season. Competition for the best hybrid Lily	I-7.30 P.M.
	Joint Delphinium Committee . . . . .	II.15 A.M.
	Joint Dahlia Committee . . . . .	II.15 A.M.
	Joint Border Carnation Committee . . . . .	II.30 A.M.
	Joint Iris Committee . . . . .	12.45 P.M.
	Lily Group Discussion: "Lilies Exhibited" (Lecture room, New Hall) . . . . .	3.30 P.M.
	Lily Group Dinner, Restaurant, New Hall, followed by discussion on "Lily Hybrids I should like to raise" . . . . .	7 P.M.
8	<b>Second day of Meeting</b> . . . . .	10 A.M.-5 P.M.
14	<b>National Carnation and Picotee Society's Show</b> (Old Hall) . . . . .	I-7.30 P.M.
	Joint Border Carnation Committee . . . . .	3 P.M.
	Joint Delphinium Committee, at the British Delphinium Society's Provincial Show at Roundhay Park, Leeds . . . . .	II.45 A.M.
	Horticultural Society of the Ministry of Agriculture and Fisheries (New Hall) . . . . .	12 NOON-7 P.M.
15	<b>Second day of Carnation Show</b> . . . . .	10 A.M.-5 P.M.
21	<b>Fortnightly Meeting.</b> Flowers in season. Competition for the best hybrid Lily. Clay Cup for Scented Roses . . . . .	I-7.30 P.M.
	Joint Delphinium Committee . . . . .	II.15 A.M.
	Joint Dahlia Committee . . . . .	II.15 A.M.
	Joint Border Carnation Committee . . . . .	II.30 A.M.
	Joint Iris Committee . . . . .	12.45 P.M.
	Lecture by Miss E. W. Jameson on "The Preservation of Vegetables for Home Use" . . . . .	3.30 P.M.
22	<b>Second day of Meeting</b> . . . . .	10 A.M.-5 P.M.
	*Demonstration at Wisley (weather permitting): Summer Pruning Fruit Trees and Shrubs . . . . .	2-4 P.M.
23	*Second day of Demonstration . . . . .	2-4 P.M.
24	<b>London Gardens Society. Exhibition of Flowers</b> (Old Hall) . . . . .	2.30-9 P.M.
25	<b>Second day of Exhibition</b> . . . . .	10 A.M.-6.30 P.M.
28	<b>Joint Border Carnation Committee</b> . . . . .	II.30 A.M.
AUGUST		
5	<b>Fortnightly Meeting.</b> Flowers in season . . . . .	I-6 P.M.
(Wed.)	Joint Dahlia Committee . . . . .	II.15 A.M.
18	<b>Fortnightly Meeting.</b> Flowers in season. Foremarke Cup for Gladioli . . . . .	I-6 P.M.
	Joint Dahlia Committee . . . . .	II.15 A.M.
	Lecture by Mr. W. E. Th. Ingwersen on "Plant Hunting in the Caucasus" . . . . .	3.30 P.M.
26	*Demonstration at Wisley (weather permitting): Vegetative Propagation of Plants . . . . .	2-4 P.M.
27	*Second day of Demonstration . . . . .	2-4 P.M.
SEPTEMBER		
1	<b>Fortnightly Meeting.</b> Flowers in season . . . . .	I-6 P.M.
	Joint Dahlia Committee . . . . .	II.15 A.M.
	Lecture by Mr. W. Logan on "Fern Growing" . . . . .	3.30 P.M.
	Alpine Garden Society's Show (Old Hall) . . . . .	I-6 P.M.
8	<b>National Dahlia Society's Show</b> (New Hall) . . . . .	12 NOON-7.30 P.M.
	Joint Dahlia Committee . . . . .	12.15 P.M.
	British Bee-Keepers' Association's Show (Old Hall) . . . . .	I-7.30 P.M.
9	<b>Second day of Dahlia Show, and British Bee-Keepers' Association's Show</b> . . . . .	10 A.M.-5 P.M.
11	<b>National Rose Society's Show</b> (both Halls) . . . . .	12 NOON-7 P.M.
12	<b>Second day of Rose Show</b> . . . . .	II A.M.-5 P.M.
15	<b>Fortnightly Meeting.</b> Flowers in season . . . . .	I-6 P.M.
	Joint Dahlia Committee . . . . .	II.15 A.M.

\* Fellows wishing to attend these Demonstrations should inform the Director, R.H.S. Gardens, Wisley, Ripley, Surrey, beforehand, mentioning the day

		<i>Time.</i>
SEPTEMBER		
15	Lecture by Mr. H. G. Hillier on "Lilacs : Beautiful Varieties, Hybrids and Species" . . . . .	3.30 P.M.
29	Fortnightly Meeting. Flowers in season . . . . .	1-6 P.M.
	Joint Dahlia Committee . . . . .	11.15 A.M.
	Lecture by Mr. G. C. Johnson on "Horticultural Education" . . . . .	3.30 P.M.
	Entries for Fruit and Vegetable Show close.	
OCTOBER		
1	Civil Service Horticultural Federation's Exhibition (New Hall) . . . . .	1-7.30 P.M.
6	<b>FRUIT AND VEGETABLE SHOW.</b> (See special schedule) . . . . .	1-7.30 P.M.
	Special exhibit from Wisley : Pests and Diseases of Fruit and Vegetables.	
	Joint Dahlia Committee . . . . .	11.15 A.M.
	Orchid Committee . . . . .	11.45 A.M.
	Fruit and Vegetable Committee . . . . .	12 NOON
	Floral A Committee . . . . .	12.15 P.M.
	Floral B Committee . . . . .	12.15 P.M.
	Lecture by Mr. F. J. Rose on "Grapes for the Small Garden" . . . . .	3.30 P.M.
7	Second day of Fruit and Vegetable Show . . . . .	10 A.M.-4 P.M.
13	Fortnightly Meeting. Flowers in season . . . . .	1-6 P.M.
	Joint Dahlia Committee . . . . .	11.15 A.M.
	Lecture by Mons. G. Truffaut on "Soil Science Progress applied in Horticulture" . . . . .	3.30 P.M.
	Lily Group Discussion : "Propagation of Lilies by Scales" (Restaurant, Old Hall) . . . . .	4.30 P.M.
27	Fortnightly Meeting. Orchids, Stove and Greenhouse Plants and Berried Shrubs . . . . .	1-7.30 P.M.
	First Masters Memorial Lecture by Dr. R. N. Salaman, on "The History of the Potato from the Time of its Introduction into Europe" . . . . .	3.30 P.M.
28	Second day of Meeting . . . . .	10 A.M.-4 P.M.
NOVEMBER		
5	National Chrysanthemum Society's Show (New Hall) . . . . .	1-7.30 P.M.
6	Second day of Chrysanthemum Show . . . . .	10 A.M.-5 P.M.
10	Fortnightly Meeting. Flowers in season . . . . .	1-5 P.M.
	Second Masters Memorial Lecture by Dr. R. N. Salaman, on "The Introduction and Spread of the Potato in Europe, and its Subsequent Development" . . . . .	3.30 P.M.
11	*Demonstration at Wisley (weather permitting) : Planting Fruit Trees and Roses . . . . .	2-4 P.M.
12	*Second day of Demonstration . . . . .	2-4 P.M.
24	Fortnightly Meeting. Flowers in season . . . . .	1-5 P.M.
	Lecture by Mr. J. Woolman on "Newer Chrysanthemums" . . . . .	3.30 P.M.
	British Carnation Society's Show (Old Hall) . . . . .	1-7.30 P.M.
	Joint Perpetual - Flowering Carnation Committee . . . . .	12 NOON.
25	Second day of Carnation Show . . . . .	10 A.M.-5 P.M.
DECEMBER		
8	Fortnightly Meeting. Flowers in season . . . . .	1-5 P.M.
	Institute of Landscape Architects. Presidential Address . . . . .	3.30 P.M.
9	*Demonstration at Wisley (weather permitting) : Pruning Fruit Trees . . . . .	2-4 P.M.
10	*Second day of Demonstration . . . . .	2-4 P.M.
1937		
JANUARY		
12	Fortnightly Meeting. Flowers in season . . . . .	1-5 P.M.
26	Fortnightly Meeting. Flowers in season . . . . .	1-5 P.M.

\* Fellows wishing to attend these Demonstrations should inform the Director, R.H.S. Gardens, Wisley, Ripley, Surrey, beforehand, mentioning the day.

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\* Elected annually at Annual General Meeting.

† Retire at Annual Meeting, 1936.

## THE SOCIETY AND ITS WORK.

THE purpose of the Society is to encourage and improve the science and practice of horticulture in all its branches. It consists of Fellows, Associates, Honorary Fellows and Associates of Honour, numbering in all over 31,600, and over 700 Horticultural Societies are affiliated to it.

It is governed by a President and Council of fifteen members, of whom one-fifth retire annually in February, when the election of President, Vice-Presidents, Treasurer, and three new members of Council takes place.

The Society was founded at a meeting held on March 7, 1804, at Hatchard's book-shop in Piccadilly—a fact recently commemorated by a bronze plaque placed upon the house. Mr. JOHN WEDGWOOD was in the Chair, and there were also present the Right Hon. CHARLES GREVILLE, the Right Hon. Sir JOSEPH BANKS, P.R.S., WILLIAM TOWNSEND AITON, RICHARD ANTHONY SALISBURY, WILLIAM FORSYTH, and J. DICKSON. These gentlemen formed the nucleus of the Horticultural Society of London, and the avowed duty of that Society was "to collect every information respecting the cultivation of all plants and trees" and "to foster and encourage every branch of horticulture."

The meetings of the Society were first held in the rooms of the Linnean Society, then in Regent Street, and for many years they took place at 21 Regent Street; then for a few months at St. Martin's Place, Trafalgar Square, whence they were transferred under the Presidency of H.R.H. the PRINCE CONSORT to premises of some magnificence at South Kensington, on land now partly occupied by the Imperial Institute.

These premises finally proved too expensive to maintain, and for this and other reasons the Society's offices were removed in 1888 to rooms in Victoria Street, and the meetings took place in the London Scottish Drill Hall, Buckingham Gate, S.W., until 1904, when the Hall and Offices in Vincent Square, built by subscription to commemorate the Society's Centenary, were opened by His Majesty King EDWARD VII. From 1888 under the Presidency of Sir TREVOR LAWRENCE, Bt., and the Secretaryship of the Rev. WILLIAM WILKS, M.A., the story of the Society had been one of progress. This progress continued after the opening of the Hall until the accommodation both for offices and meetings had been outgrown, and in 1928 the New Hall in Greycoat Street was opened by H.R.H. Princess MARY, and the offices in Vincent Square were rearranged and a fine new Library was constructed on the top floor.

The Society was incorporated by Royal Charter, granted on April 7, 1809, and in 1861, on its move to South Kensington, a new Charter was granted to it under the style and title of the Royal Horticultural Society. A supplementary Charter was granted in 1899, and as the Society had continued to increase beyond expectations a new Charter was granted in 1928, coincident with the opening of the New Hall.

## FELLOWSHIP OF THE SOCIETY.

Anyone interested in horticulture is eligible for Fellowship and is invited to become a Fellow. Candidates for Fellowship must be nominated on a special form, a copy of which is enclosed, and the nomination form must be signed by a Fellow. Privileges of Fellowship, which include admission to all meetings and to the Society's Garden at Wisley, the use of the Library, a copy of the JOURNAL, etc., are set out on the Nomination Form. The entry fee is at present in abeyance. The annual subscription is from one to four guineas.

## ASSOCIATES OF THE SOCIETY.

Candidates for election as Associates must be *bona fide* employed in horticulture, and must be nominated by two Fellows. They pay 10s. 6d. per annum.

HONORARY FELLOWS AND ASSOCIATES OF HONOUR  
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 VAVILOV, Prof. Dr. N. I., Director of the Institute of Plant Industry, 44 Rue Herzen, Leningrad, U.S.S.R.  
 VOELCKER, J. A., C.I.E., M.A., Ph.D., F.I.C., F.L.S., 1 Tudor Street, E.C. 4.  
 VOLLBRACHT, ADOLF, Austrian Hort. Society, 12 Parkring, Vienna.  
 WALLACE, R. HEDGER, c/o Mrs. Camm, Perzan, Wood End Road, Wednesfield, Staffs.  
 WALLER, ERNEST, Emsallah, Tangier, Morocco.  
 WORSDELL, W. CROSFIELD, 57 Cresswell Road, East Twickenham, Middlesex.  
 WORSLEY, A., J.P., Mandeville House, Isleworth.  
 ZAWODNY, M. le Docteur JOSEPH, 105 Moldantein, Czechoslovakia.

## ASSOCIATES OF HONOUR.

Established in 1930 and conferred on Persons of British nationality who have rendered distinguished service to Horticulture in the course of their employment. The number of Associates of Honour may not exceed 100 at any one time.

- 1933 ALEXANDER, JOHN, Niddrie Gardens, Craigmillar, near Edinburgh.  
 1933 ALLAN, DONALD, c/o Dobbie's Seed Farms, Marks Tey, Essex.  
 1931 ANDERSON, T. W., c/o Laxton Bros, 63 High Street, Bedford.  
 1931 ANDREWS, A., Park Superintendent's Office, Municipal Offices, Plymouth.  
 1930 ASHMORE, A. J., 10 Desenfans Road, Dulwich, S.E. 21.  
 1932 BAKER, W. G., Botanic Garden, Oxford.  
 1930 BANKS, G. H., Glasgow Botanic Gardens, Glasgow.  
 1934 BARRON, F. S., c/o R. H. Bath, Ltd., Floral Farms, Wisbech, Cambs.  
 1933 BEATTY, T., 175 Myland Road, Colchester.  
 1930 BENBOW, J., The Manor House, Kingston Park, Dorchester.  
 1930 BENNETT, W., 7 Woodcrest Road, Darlington, Durham.  
 1931 BESAST, J. W., Department of Agriculture, Botanic Gardens, Glasnevin, Dublin, N.W. 3.  
 1931 BLAIR, C., The Gardens, Preston House, Linlithgow.  
 1931 BLAIR, P. C., Hogart, Trentham, Stoke-on-Trent.  
 1930 BLISS, D., V.M.H., Parks Department, 4 Mount Street, Swansea, Glam.  
 1934 BRAGGINS, S. W. MACLEOD.  
 1931 BREW, E. U., c/o Charlesworth & Co., Ltd., Orchid Growers, Haywards Heath, Sussex.  
 1930 BROWN, T. W., Ministry of Agriculture, Horticultural Section, Giza (Mudiriya), Egypt.  
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 1934 BURTON, Miss E. M., 3 Golf Course Road, Bonnyrigg, Midlothian.  
 1932 CHISHOLM, J. S., Edinburgh & East of Scotland College of Agriculture, 13 George Square, Edinburgh.  
 1933 CHRISTIE, J. S., 424 Lordship Lane, E. Dulwich, S.E. 22.  
 1933 CLARK, W. B., Superintendent, Links and Parks Department, Town House, Aberdeen.  
 1931 COATES, A. W., The Gardens, Wakehurst Place, Ardingly, Sussex.  
 1930 COMBER, J., The Gardens, Nymans, Handcross, Sussex.  
 1931 COOK, C. H., The Royal Gardens, Windsor.  
 1930 COOK, T. H., The Royal Gardens, Sandringham, King's Lynn, Norfolk.  
 1930 COOPER, E. W., c/o Sanders, St. Albans, Herts.  
 1930 COUTTS, J., V.M.H., 43 The Green, Kew, Surrey.  
 1932 CRAVEN, WILLIAM, Mowbray House, Radipole Park Drive, Weymouth, Dorset.  
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 1930 GUTTRIDGE, J. J., Chief Superintendent of Parks and Gardens, The Bridge, Sefton Park, Liverpool.  
 1932 HALES, WM., A.L.S., V.M.H., Chelsea Physic Gardens, Chelsea, S.W. 3.  
 1934 HARRISON, A.T., The Gardens, Training Centre, Jordanhill, Glasgow, W. 3.  
 1930 HARROW, G., Gracefield, 27 Tudor Road, Kingston Hill.  
 1930 HILL, JOHN, The Gardens, Duntreath Castle, Blane field, Stirlingshire.  
 1930 HOLTON, R. H., c/o J. Cheal & Sons, Ltd., The Nurseries, Crawley, Sussex.  
 1930 HONESS, W. H., Walhampton Gardens, Lymington, Hants.  
 1932 HORWOOD, FREDERICK, M.M., Hillside, Picts Hill, Langport, Somerset.  
 1931 HOSKING, A., Crossriggs, Poltimore Road, Guildford, Surrey.  
 1930 ISBELL, W., 16 St. Mark's Road, Bush Hill Park, Enfield.  
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 1931 LANE, G. T., 83 Ennerdale Road, Richmond, Surrey.  
 1930 LOGAN, W., St. Blaise, 8 Holtwhite Avenue, Enfield, Middlesex.  
 1931 LONG, E. P., Drax House, Orcheston St. George, Wilts.  
 1932 LONG, F. R., Superintendent of Public Parks, St. George's Park, Port Elizabeth, Cape Province, Africa.  
 1931 McDONALD, F. W., 172 London Road, Reading.  
 1931 MACDONALD, J. V., The Gardens, Whetstone, Somerset Road, Edgbaston, Birmingham.  
 1930 MACFIE, JAMES B., c/o Dobbie & Co., Ltd., Edinburgh.  
 1932 McINNES, DONALD, The Gardens, Glamis Castle, Glamis, Angus, Scotland.

- 1931 MCINTOSH, D. F., c/o R. H. Bath, Ltd., Floral Farms, Wisbech, Cambs.  
 1930 McLAREN, J., Superintendent, Golden Gate Park, San Francisco.  
 1931 MACRAE, A., Superintendent, Parks and Cemeteries Department, 93 Commercial Street, Dundee.  
 1931 MAITLAND, T. D., M.B.E., 20 Craiglockhart Terrace, Edinburgh.  
 1932 MANN, PHILIP, 1 Stoke Road, Aylesbury, Bucks.  
 1932 MARKHAM, E., The Moat, Gravetye, East Grinstead, Sussex.  
 1932 MARKHAM, H., The Gardens, Wrotham Park, Barnet, Herts.  
 1930 MARLOW, W. J.  
 1931 MATHEWS, J. W., National Botanic Gardens, Kirstenbosch, Claremont, S. Africa.  
 1930 METCALFE, A. W., The Gardens, Luton Hoo, Luton, Beds.  
 1935 MOORE, H. J., Box 61, Islington, Ontario, Canada.  
 1930 MUDGE, E. C., c/o Barr & Sons, 11/13 King Street, Covent Garden, W.C.  
 1933 MUSTOE, W. R., O.B.E., 70 Stag Leys, Ashted, Surrey.  
 1930 NEAL, E., The Gardens, Tilgate, Crawley, Sussex.  
 1934 NOBBS, G., Osborne House Gardens, East Cowes, I. of W.  
 1930 OLIVER, W., c/o John Forbes, Ltd., Buccleuch Nurseries, Hawick.  
 1930 PAGE, W. H., The Gardens, Chardwar, Bourton-on-the-Water, Glos.  
 1933 PERFECT, B. F., Gatton Park Gardens, Reigate, Surrey.  
 1931 PRITCHARD, W. J., Philburn, Bucknalls Lane, Garston, nr. Watford, Herts.  
 1930 PUDDLE, F. C., The Gardens, Bodnant, Tal-y-Cafn, Denbighshire.  
 1933 RADLEY, S., c/o R. Veitch & Son, Ltd., The Royal Nurseries, Alphonington, Exeter.  
 1934 RAFFILL, C. P., 193 Kew Road, Kew, Surrey.  
 1930 ROGERS, J., Brooklyn, Villiers Road, Woodthorpe, Nottingham.  
 1930 SCOTT, J. W., c/o Lowe & Shawyer, Ltd., The Nurseries, Eaton Bray, Dunstable.  
 1930 SHILL, J. E., Orchid Department, Dell Park, Englefield Green, Surrey.  
 1930 SILLITOE, F. S., M.B.E., 31 Priory Road, Kew, Surrey.  
 1933 SMITH, SAMUEL, The Gardens, Penjerrick, Falmouth, Cornwall.  
 1930 STREET, C., The Gardens, Floors Castle, Kelso, Roxburghshire.  
 1930 TANNOCK, D., Superintendent, Reserves Department, Botanic Gardens, Dunedin, New Zealand.  
 1932 TAYLOR, GEORGE, The Gardens, Bulstrode, Gerrard's Cross, Bucks.  
 1932 TAYLOR, GEORGE M., Links Cottage, Longniddry, East Lothian.  
 1932 TROUGHTON, FRANCIS, 1 Vernon Park, St. John's, Worcester.  
 1933 TUCKER, S. W., The Gardens, Longford Castle, Salisbury, Wilts.  
 1935 TUSTIN, F., The Gardens, Abbotswood, Stow-on-the-Wold, Glos.  
 1934 USHER, A. E., Ranston Gardens, Blandford, Dorset.  
 1930 WEBSTER, C., The Gardens, Gordon Castle, Fochabers, Elginshire.  
 1930 WESTON, J. G., Chatsworth Gardens, Bakewell, Derbyshire.  
 1931 WILLIAMS, R. O., Beit Cattar, Katamon Road, Jerusalem, Palestine.  
 1932 WOOD, C. F., Park Lodge, Stangham, Handcross, Sussex.  
 1930 WOODWARD, J. G., The Gardens, Barham Court, Teston, Maidstone.  
 1935 WORT, J., 4 Lidyard Road, Archway Road, N. 19.

#### FORMER ASSOCIATES OF HONOUR.

- |                               |                                   |                                |
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| 1930 BROWN, J. (d. 1930).     | 1933 INGRAM, G. J. (d. 1935).     | 1930 STEWART, L. B. (d. 1934). |
| 1930 BUSS, F. (d. 1930).      | 1930 IRVING, W. (d. 1934).        | 1931 TAYLOR, T. W. (d. 1932).  |
| 1931 CAMERON, J. (d. 1935).   | 1931 JONES, J., O.B.E. (d. 1934). | 1932 VASEY, A. E. (d. 1934).   |
| 1930 CARPENTER, G. (d. 1935). | 1932 JONES, J. (d. 1933).         | 1930 WAKELY, C. (d. 1932).     |
| 1931 HOARE, J. (d. 1932).     |                                   |                                |

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Any horticultural, allotment, or cottage garden Society may become affiliated to the Royal Horticultural Society on payment of a subscription of one guinea. The privileges, among others, include two transferable tickets of admission to all the meetings announced in the Calendar and to the Society's Garden at Wisley, two copies of the Society's JOURNAL as issued, and a copy of the Society's Rules for Judging, the right to purchase at a discount many of the Society's publications, and at cost price the Affiliated Society's Medal and Medal Cards, to apply for a grant of a Banksian Medal and Card, etc. etc.

Fellows are asked to bring to the notice of local Societies the great privileges conferred by affiliation; full particulars, together with an application form, can be obtained by applying to the Secretary.



## MEETINGS. (See Calendar, pp. 1-6.)

A meeting and exhibition are held usually at fortnightly intervals in the New Hall in Greycoat Street, Westminster, and sometimes the Old Hall in Vincent Square is occupied as well.

There are also special meetings for the Daffodil Show, the Early Market Produce Show, the Great Spring Show at Chelsea, the Amateurs' Show, and the Fruit and Vegetable Show.

The times during which the Shows are open are shown in the Calendar, and Fellows are particularly asked to note that, in order to meet the convenience of those who cannot attend the meetings during ordinary working hours, the two-day meetings are open on the first day until 7.30 P.M.

At these meetings there are exhibitions of Flowers, Fruits and Vegetables, to which all horticulturists are invited to contribute. The arrangements for showing are briefly set out in the section dealing with the Committees and their work (pp. 33-56), and at all these meetings Committees appointed for the purpose make recommendations for Awards (p. 28) to the plants before them.

Sundries of a horticultural nature are exhibited at the meetings in December and January, and if space permits on November 24, and at the Great Spring Show; Pictures, Models and Plans of Flowers and Gardens are also admitted to the Shows in November, December, January and February.

## LECTURES.

Lectures on subjects of horticultural interest are given at the fortnightly meetings at 3.30 P.M., as indicated in the Calendar, and in addition four discussions have been arranged for those especially interested in Lilies and their allies (see Lily Group below).

## CONFERENCE ON ALPINE PLANTS.

A Conference on Alpine Plants will be held on Tuesday, Wednesday and Thursday, May 5, 6 and 7, and on the Tuesday and Wednesday there will be a special Show in the New Hall. The discussions at this Conference will be published, and full particulars can be obtained on application to the Secretary.

## LILY GROUP.

The Lily Group consists of Fellows and Associates of the Royal Horticultural Society who are especially interested in Lilies, *Nomocharis* and *Fritillaries*. Its object is to provide Members with facilities for meeting to exchange views upon these plants. Membership is open to all Fellows and Associates without additional subscription. Those who wish to join should apply in writing to the Secretary, who notifies Members by post of all meetings. Upon the recommendation

of the Lily Committee the Council has arranged five meetings for 1936. The dates and subjects to be discussed will be found in the Calendar. Each discussion will be introduced by one or more speakers who have made a special study of the subject, and thereafter the discussion will be open. All Members are cordially invited to take part, and to bring plants, cut blooms, photographs or lantern slides bearing upon the subject under discussion. Inquiries from beginners will be welcomed.

#### THE LINDLEY LIBRARY.

Trustees: The Society acting by its Council.

Keeper: F. J. CHITTENDEN, F.L.S., V.M.H.

Asst. Lib.: W. T. STEARN, F.L.S.

This Library now consists of more than 15,000 volumes and pamphlets, the latter being very important, and is registered as an "Outlier Library" of the Central Library for Students (see regulation 11).

The nucleus of the Library is the fine collection of books and pamphlets belonging to the late Dr. LINDLEY, so long and so honourably associated with the Society. Large additions have been received and are constantly being made both by donations and by purchases by the Society.

The original fittings and furnishings of the old Library, the generous gift of the late Sir HENRY SCHRÖDER, have been carefully removed and re-erected in the new Library on the third floor of the Offices of the Society in Vincent Square, and the cost of equipment of the stack room was presented by the Trustees of the Carnegie United Kingdom Trust Fund.

The Council confidently asks the assistance of the Fellows and of the general public in its endeavours to supplement the Library. Donations of money, and of horticultural and botanical books and horticultural trade catalogues are earnestly solicited, and may be sent to the Secretary, R.H.S., Vincent Square, S.W. 1.

#### LIBRARY REGULATIONS.

1. The Library is open daily (Sundays and holidays excepted) from 10 A.M. to 5 P.M. (Saturdays 10 A.M. to 1 P.M.). On two-day Shows at Westminster, it will be open until 6 o'clock on the first day of the Show.

2. The right of closing the Library at any time for purposes of re-arrangement, cleaning, etc., is reserved. It will be closed annually for a fortnight after the second fortnightly meeting of the Society in July, in order that the books may be cleaned and the stock inspected. For this purpose it is absolutely necessary that all books borrowed be returned on or before July 21. During the two weeks which follow Fellows will be able to consult books but not to borrow them.

3. Fellows of the Society have access to the Library at all times when it is open.

4. Gardeners and others, not Fellows or Officers of the Society, must make application to the Secretary for permission to use the Library, and must enter their names and addresses in a book provided for that purpose.

5. Anyone requiring the loan of a book to be taken from the Library must make written application to the Secretary, and loans will be granted on the following conditions, viz. :—

- (a) That the borrower be personally known to one or more of the Officers of the Society, or produce satisfactory references.
- (b) That the borrower sign a receipt for the volumes in a book provided for the purpose, before removing them from the premises, or if unable to attend, acknowledge the receipt by post ; and undertake to restore the books in good condition and to comply with the regulations.
- (c) That not more than three volumes be lent to one person at one time.
- (d) That borrowers through the post pay the postage both ways.

6. A certain discretion will be used as to what books shall be lent, but rare books which it would be difficult to replace, periodicals, expensive illustrated works and works of reference which are likely to be in frequent requisition within the Library itself may not be removed from the premises.

7. No books may be sent to Fellows resident abroad.

8. All books borrowed must be returned to the Library in good condition within one calendar month from the date of issue, and if sent by post must be properly protected and packed, but an extension of time may be granted on application.

9. The Secretary is empowered to demand of the borrowers such books as are detained beyond the prescribed time, and to take such steps as may be necessary to secure the prompt return of the same.

10. The loss of any book or any damage must be made good by the borrower.

11. Fellows requiring books on loan from the "Outlier" Libraries should make written application either to the Secretary of the Society or to the National Central Library for Students, Malet Street, London, W.C. 1.

12. The Trustees reserve the right of repealing or altering any of these regulations from time to time as may be required.

#### LIBRARY CATALOGUE.

The catalogue of the Library up to 1927 is now available. Price 5s. Orders should be placed with the Secretary.

#### PRIVILEGES OF CHEMICAL ANALYSIS.

Analyses of soils, manures, water, etc., are made by the Society's Consulting Chemist, Dr. J. AUGUSTUS VOELCKER, M.A., F.I.C., 1 Tudor Street, New Bridge St., London, E.C., at a reduced rate for

Fellows who are not engaged in any horticultural trade or in the manufacture or sale of any substance sent for analysis, and for Affiliated Societies. Full particulars of fees, methods of sampling, etc., can be obtained of the Secretary.

#### PUBLICATIONS.

The Society's publications include the JOURNAL, now issued to all Fellows monthly, containing an account of the Society's activities, lectures delivered at the fortnightly meetings, articles on horticultural matters specially contributed, descriptions and notes on plants to which awards have been made, accounts of work at Wisley, etc.

CURTIS'S BOTANICAL MAGAZINE, publication of which began in 1787, containing hand-coloured illustrations, descriptions and notes on new plants or plants recently introduced to gardens from abroad, published quarterly, price £3 3s. per annum. The INDEX LONDINENSIS, an index of all illustrations of flowering plants and ferns published between 1753 and 1921, in six volumes, price £5 5s. a volume. A supplement up to the end of 1935 is in preparation.

An Index to the Society's JOURNAL from 1834 to the present time is being printed and will be published in due course.

The LILY YEAR BOOK, price 5s. in paper, 6s. in cloth, is published annually in autumn, and the DAFFODIL YEAR BOOK, price 5s. in paper, 6s. in cloth, appears in summer.

Reports of the Society's Conferences (the latest being the report of the Conference on Cherries and Soft Fruits, entitled Cherries and Soft Fruits: Varieties and Cultivation in 1935) are also published from time to time, as well as numerous Pamphlets and Books and Lists. A full list can be obtained on application to the Secretary.

#### FELLOWS' TICKETS.

Fellows are particularly requested to observe the rules of the Society governing the use of personal passes and transferable tickets. The personal passes must only be used by the Fellows themselves; a transferable ticket must be retained by the person who has used it to pass him into the particular Show. All personal passes and transferable tickets must be produced to the Society's officers on demand.

#### ADMISSION TO MEETINGS WITHOUT TICKETS.

Any Fellow who attends the Society's Meetings at its Halls without producing his ticket will be asked to pay the entrance money and sign his name in a special book. The entrance money will be refunded to him on written application to the Secretary.

#### GARDENERS' TICKETS FOR THE GREAT SPRING SHOW AT CHELSEA.

Any gardener or employee in a private, public or botanic garden, nursery or seed establishment may obtain tickets at reduced prices for the Great Spring Show, admitting on the Thursday of the Show, on application direct to the Secretary, R.H.S., Vincent Square, West-

minster, S.W. 1, not less than three days before the Show. All applications must be on the special forms which may be obtained from the Secretary.

#### KINDRED SOCIETIES' SHOWS.

The following Kindred Societies will be holding Shows in the Society's Hall on the dates given in the Calendar, and Fellows' tickets will admit: Alpine Garden Society, British Carnation Society, Rhododendron Association, Iris Society, British Delphinium Society, Cactus and Succulent Society, National Carnation and Picotee Society, British Gladiolus Society, London Gardens Guild, London Allotments and Gardens Shows Society, National Dahlia Society, and the National Chrysanthemum Society. The National Auricula and Primula Society and the London Viola and Pansy Society will stage their exhibits at the ordinary fortnightly meetings.

#### FORM OF BEQUEST.

I give and bequeath to the Treasurer for the time being of The Royal Horticultural Society, London, the sum of £ , to be paid out of such part of my personal estate as I can lawfully charge with the payment of such legacy, and to be paid free of legacy duty, within six months of my decease; the receipt of such Treasurer to be a sufficient discharge for the same. And I declare that the said legacy shall be applied towards [the general purposes of the Society].

#### ROYAL HORTICULTURAL SOCIETY'S HALLS.

When not in use by the Society, the Halls, Lecture Room and Committee Rooms may be hired at reasonable rates for any large gatherings, such as Exhibitions, Shows, Concerts, Bazaars, Meetings and Balls.

Copies of the regulations and terms for hiring the Halls and Rooms may be obtained on application to the Secretary, Royal Horticultural Society, Vincent Square, Westminster, S.W. 1.

#### INFORMATION AND INQUIRIES.

Fellows may obtain information and advice from the Society as to the names of flowers and fruits, on points of practice, attacks of insects and fungi, and on other questions. All inquiries should be sent direct to the Secretary, R.H.S. Offices, Vincent Square, S.W. 1.

#### HOW TO SEND SPECIMENS FOR IDENTIFICATION.

When inquiring the name of a plant or a fruit Fellows would greatly facilitate identification of the specimen by observing the following rules:

1. Send a good strong piece, bearing leaves and at least three blossoms. Cut the flowers in the bud stage or they will be over before

they arrive. It is rarely possible and never wise to name a plant from its leaf alone, and poor specimens with only one blossom make identification unnecessarily difficult.

2. Wrap in soft paper and then pack in moss or even damp grass. Do not use cotton wool. Specimens should not be pressed.

3. Give all the information you can respecting the specimens, including the size of the plant and the country of origin or natural habitat, if known. With a garden plant, say where it is growing, greenhouse or open, sun or shade, etc.

4. Of fruits, send at least three perfect specimens of a variety. Do not send until the fruits are mature, and then choose specimens representative of the particular variety. Avoid sending bruised, diseased or abnormal fruits. Include with each variety a typical shoot with foliage. Number each variety, preferably in Roman figures, by marking the skin with a hard pencil, and keep a record of the tree from which it is gathered. Labels are often displaced during transit. Wrap each fruit in paper and pack it carefully and securely in wood-wool or similar material. Flimsy cardboard boxes are usually crushed in the post, while scented soap boxes taint the fruit and obscure the characteristic flavour. Give all the information you can respecting the age of the trees and how they are grown, *e.g.* indoors or out, as cordons bushes or standards, etc.

5. It is a convenience if specimens are sent so as to reach the office on the day before a Show day, as it is then possible to enlist the services of the experts on the Committees.

#### INSPECTION OF GARDENS.

Inspection of gardens belonging to Fellows is conducted by a thoroughly competent Inspector from the Society, who reports and advises at the following cost, *viz.* : a fee of £3 3s. for one day (or £5 5s. for two consecutive days), together with all out-of-pocket expenses. No inspection may occupy more than two days, save by special arrangement. Should two or more Fellows residing in the same district, with their gardens within easy reach of one another, desire to have the services of the Garden Inspector, arrangements will be made for such a combined inspection and the fee and expenses divided by consent of those concerned. Fellows wishing for the services of an Inspector are requested to give at least a week's notice and choice of two or three days, and to indicate the most convenient railway station and its distance from their garden. Gardens can only be inspected at the *written* request of the *owner*.

#### SALE OF EXHIBITS AT SHOWS.

The attention of Fellows is drawn to the Society's rule that nothing may be sold for removal during a Show. Misunderstandings with regard to this rule sometimes occur, and its strict observance is essential for the smooth running of the meetings.

## THE SOCIETY'S GARDENS.

*Presented by the late Sir Thomas Hanbury, K.C.V.O.*

## WISLEY COMMITTEE

*appointed under the Hanbury Trust Deed.**Trustees.*

C. R. SCRASE-DICKINS, M.A., D.L.  
 Sir CECIL HANBURY, M.P., F.L.S.  
 The MARQUESS OF HEADFORT

*R.H.S. Representatives.*

PRESIDENT, *ex-officio*.  
 TREASURER, *ex-officio*.  
 C. T. MUSGRAVE, V.M.H.

*Trustees of the Wisley Gardens Endowment Fund.*

## THE PRESIDENT AND COUNCIL OF THE SOCIETY.

An important part of the work of the Society is carried out at its gardens at Wisley. The Society has always maintained a garden for the practical side of its work: in its early days at Kensington, then at Ealing and Chiswick, and finally, in 1903, through the kindness of Sir THOMAS HANBURY the present gardens at Wisley, which were handed over to the Society in trust and which have since been considerably enlarged.

*Director.*

R. L. HARROW, V.M.H.

*Keeper of the Laboratory.*

M. A. H. TINKER, M.A., D.Sc.,  
 F.L.S.

*Mycology.*

D. E. GREEN, M.Sc.

*Entomology.*

G. F. WILSON, F.L.S., F.R.E.S.,  
 N.D.H.

*Botany.*

N. K. GOULD.

*Assistant for Trials.*

F. C. BROWN.

*Assistant for Fruit Experiments.*

A. N. RAWES.

*Chief Clerk.*

W. D. CARTWRIGHT.

*Keeper of the Garden.*

R. FINDLAY.

*Superintendent of Floral  
Department.*

W. J. BLAKEY.

*Superintendent of Fruit and  
Vegetable Department.*

J. N. MCGOOGAN.

*Superintendent of Rock Garden  
Department.*

J. T. WALL.

*Artist.*

A. J. WISE.

*Caretaker and Engineer.*

W. HOLMES.

*Assistant to the Director.*

B. O. MULLIGAN.

The whole of the work at Wisley is under the control of the President and Council of the Society, whose object is to develop the garden in such a way that it will meet all the requirements of horticulture and serve not only for the enjoyment and instruction of Fellows, but also for the advancement of horticultural science.

Trials of plants, fruits, vegetables, and sundries are held annually with the object of discovering the best of their several kinds and varieties. At the same time the varieties are described and classified.

The laboratory provides accommodation for the work of the members of the staff and for the instruction of student gardeners who receive training in both the science and practice of gardening.

A prospectus of the School of Horticulture may be had on application to the Secretary, Royal Horticultural Society, Vincent Square, Westminster, S.W. 1; or to the Director, R.H.S. Gardens, Wisley, Ripley, Surrey.

Practical demonstrations of garden operations are held at suitable seasons: see Calendar of Shows and Fellows' Tickets.

#### ADMISSION TO THE GARDENS AT WISLEY.

The gates will be open on week-days, including Bank Holidays (but Good Friday and Christmas Day excepted), from 10 A.M. to sunset, or to 7.30 P.M. (whichever is the earlier), on Sundays from the first Sunday in April to the last Sunday in September from 2 to 6 P.M., and on Sundays in October from 2 to 5 P.M.

Fellows of the Society, on showing their tickets, have free personal admission to the Gardens on all occasions when the gates are open.

Friends of Fellows will be admitted on presenting a Fellow's Transferable Ticket, which will admit three persons in all.

The public are admitted on week-days on payment of 2s. 6d. for adults, and 1s. for children under the age of 15 years; admission on Sundays is reserved for Fellows and their friends.

Children under the age of 15 years will not be admitted unless accompanied by an adult, who will be held responsible for their conduct while in the Gardens.

Members of affiliated Societies and of Horticultural and Scientific Institutions desirous of visiting the Gardens in parties will be afforded free admission on application to the Director of the Gardens by the responsible authority. Applications for such visits should be made at least 14 days in advance.

All other bodies desirous of visiting the Gardens in parties should apply to the Secretary of the Royal Horticultural Society, stating the number of the party and date of anticipated visit. Such parties will be required to pay 1s. a head, with a minimum of 10s., and must purchase tickets in advance.

No dogs or perambulators will be admitted. Parcels, baskets, etc., must be left at the gate.



## HOW TO GET TO THE GARDENS.

The Gardens are situated at Wisley in Surrey, within a short distance of the main Portsmouth Road, about a mile on the London side of Ripley. They are distant about four miles from Byfleet and West Weybridge Stations, four from Effingham and Horsley, and five from Weybridge, all on the Southern Railway. Motors can always be hired from Mr. Howard at Byfleet Station (5s. each way), or from Messrs. Shanks, Weybridge (10s. each way).

Byfleet, West Weybridge, and Weybridge Stations are on the Southern Railway Main Line and are served by a convenient service of trains from Waterloo. There are connexions with Chertsey and Reading at Weybridge.

Effingham and Horsley Stations are served by a frequent service of electric trains from Waterloo and Guildford.

Cheap day tickets are issued from Waterloo to the above Stations as under :

<i>To</i>	<i>Return Fares.</i>		<i>On</i>
	<i>1st Class.</i>	<i>3rd Class.</i>	
Effingham Junction .	4s. 3d.	2s. 9d.	} Week-days and Sundays by all trains.
Horsley . . . .	4s. 6d.	3s. 0d.	
Weybridge . . . .	3s. 9d.	2s. 6d.	
West Weybridge . .	4s. 3d.	2s. 9d.	
Byfleet . . . . .	4s. 6d.	3s. 0d.	

Available for return by any train on the day of issue.

An hourly service (half-hourly on Sundays in the summer) of omnibuses—Service No. 215 (Monday to Friday), and No. 20 (Saturday and Sunday)—runs along the Portsmouth Road between Kingston Omnibus Station, near Kingston Railway Station, and North Street, Guildford, and passes within 5 minutes' walk of the Gardens; and other local services within about a mile.

Service Nos. 20 and 215 provide connexions with other services as under :

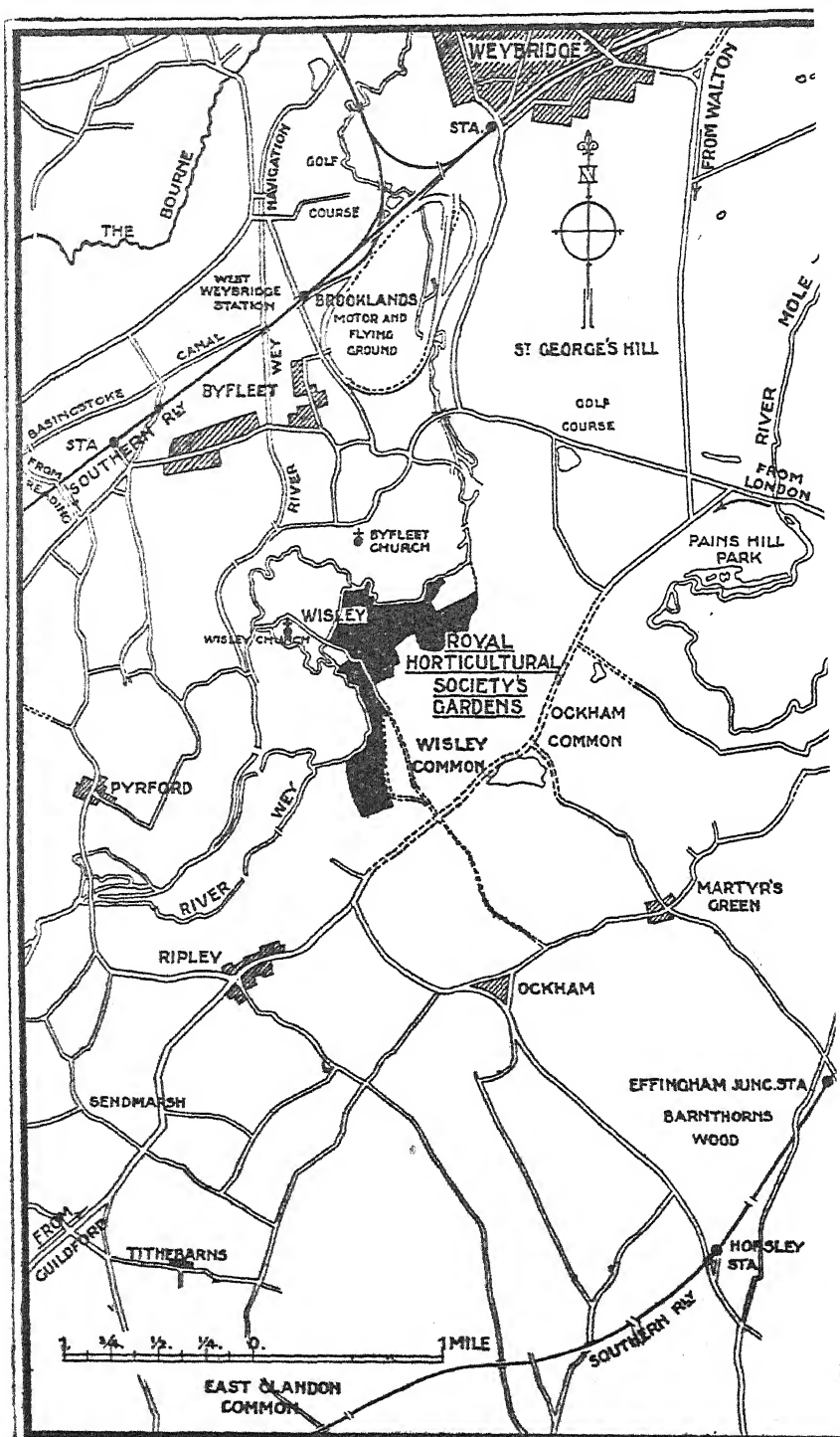
*At Cobham (White Lion)* with Service No. 462 for Stoke D'Abernon, Leatherhead, Weybridge, Addlestone, Chertsey, Staines, Wraysbury, and Slough.

*At Esher (Bear Hotel)* with Service No. 217 for Hersham, Walton-on-Thames; and Service No. 218 for Lower Halliford, Shepperton and Laleham.

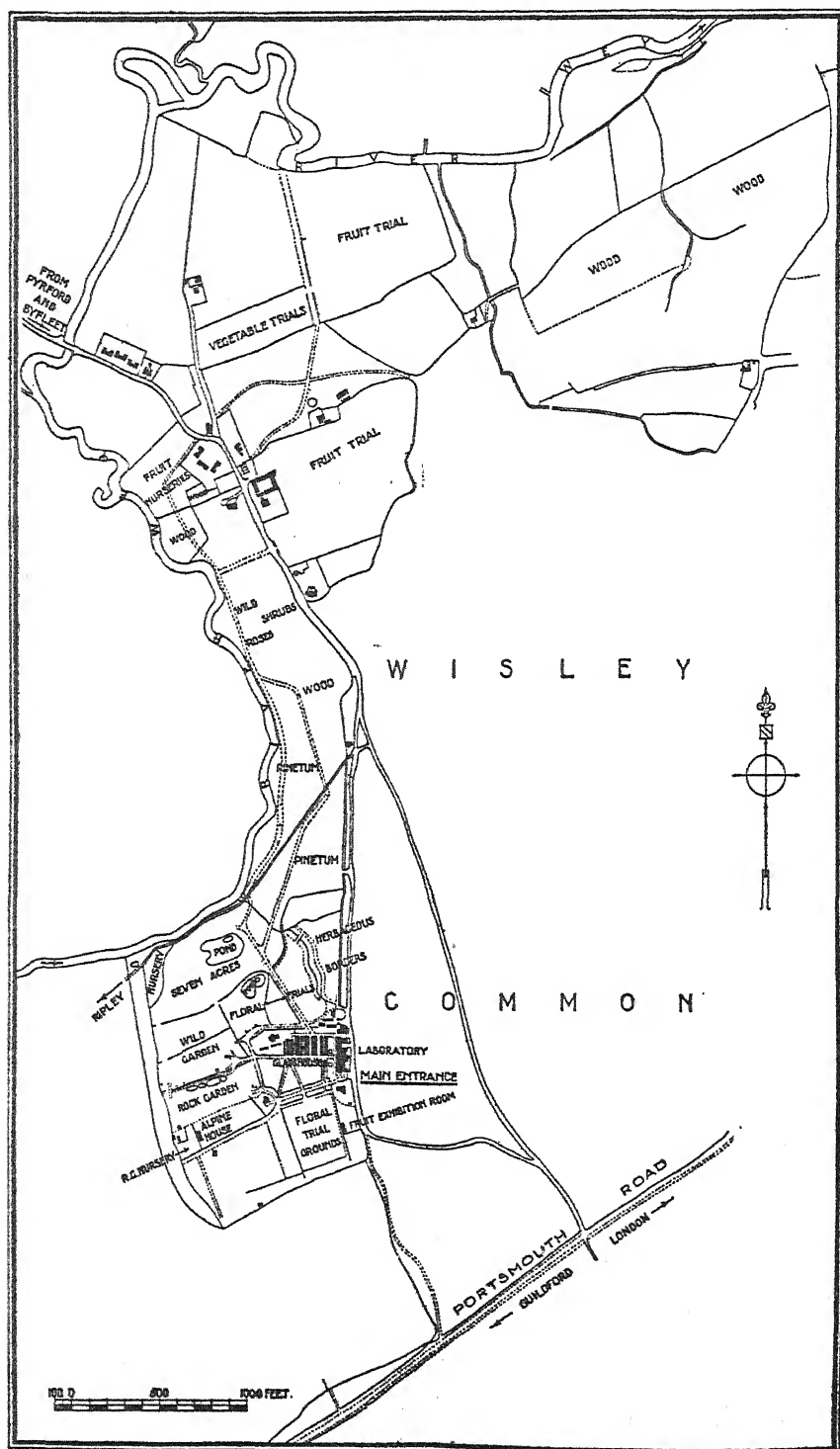
*At Kingston Omnibus Station* with Service Nos. 14 (Saturdays and Sundays in summer only) and 85 for Roehampton and Putney Bridge Station (District Line), with Service No. 65 for Petersham, Richmond, Brentford, and Ealing, and with Service No. 406 for Tolworth, Epsom, Tadworth, Kingswood and Reigate.

*At Ripley* with Service No. 437 for Woking, Byfleet, Chertsey, Egham and Windsor.

*From Guildford* omnibuses run to all parts of Surrey.



WISLEY GARDENS.—ROUTE MAP.



PLAN OF THE SOCIETY'S GARDENS, WISLEY.

The "Green Line" also runs a half-hourly coach service (every 20 minutes at week-ends) between Guildford and Hertford, via Marble Arch. The coaches stop by request at the turning on the Portsmouth Road (5 minutes' walk).

For times the London Passenger Transport Time-tables should be consulted.

As mentioned above, trials of Fruit, Vegetables and Flowers are being continuously carried out, and these are based on a regular Calendar. The rules governing these trials at Wisley may be had on application to the Secretary, R.H.S. Offices, Vincent Square, S.W. 1, or to the Director, R.H.S. Gardens, Wisley, Ripley, Surrey, to whom all articles for trial should be addressed. The Trials arranged for 1936-37 are as follows :

#### INVITED TRIALS, 1936.

##### TO BE JUDGED IN 1936.

###### VEGETABLES.

Early Peas . . .	. $\frac{1}{4}$ pint of each variety to be sent by January 31.
Dwarf French Beans .	. $\frac{1}{4}$ " " " " " "
Climbing French Beans	. $\frac{1}{4}$ " " " " " "

###### FLOWERS.

New Dahlias for certificate .	3 plants of each variety to be sent by April 30.
New Delphiniums " .	3 " " " " " " March 31.
New Gladioli " .	6 corms " " " " " " March 31.
Godetia " .	1 packet " " " " " " January 31.
Sidalcea " .	3 plants " " " " " " February 29.

#### PREPARATION FOR TRIALS IN 1937.

To prepare for the trials given in the Biennial Calendar, some of the seeds and plants are required sufficiently in advance to become established by the time appointed for their consideration by the Judges, namely :—

To be sent in 1936.	For Judging in 1937.	Lupines .	1 packet of each variety to be sent by June 30, 1936.
		Onions .	1 oz. of each variety to be sent by June 30, 1936.

#### CALENDAR OF R.H.S. " INVITED TRIALS."

	1936.*	1937.*
Flowers . .	New Dahlias	New Dahlias
	New Delphiniums	New Delphiniums
	New Gladioli	New Gladioli
	New Irises	New Irises
	New Sweet Peas	New Sweet Peas
	New Border Carnations	New Border Carnations
	Godetia	Asters, Annual Early Double
	Sidalcea	Carnations, Annual
	Schizanthus	Lobelia (Annual Bedding)
	Cornflower	†Lupinus polyphyllus
	Wallflower	
	Plants now growing at Wisley	

\* See above for quantities to be sent, and dates when they are required. Senders are urgently asked to consult the list which asks for certain plants, etc., to be sent a year or two in advance of that in which they will be judged.

† This trial is confined to named varieties which come true from seed, and only these can be accepted.

CALENDAR OF R.H.S. "INVITED TRIALS"—*continued*.

	1936.*	1937.*
Vegetables .	Cabbages (plants now growing at Wisley) Early Peas Dwarf French Beans Climbing French Beans	Cos Lettuce Leeks Onions (Autumn sown) Maincrop Peas Globe Artichokes (seeds and plants) Broccoli (January-March varieties)

The Gardens themselves cover nearly 200 acres, and on general lines are laid out as shown on the plan on p. 23.

A section of the work at the Gardens of national importance is the trials of all kinds of hardy fruit for commercial planting. These trials are conducted under a Joint Committee of the Ministry of Agriculture and Fisheries, and the Royal Horticultural Society (see p. 52). They commenced in 1922, and many useful results are being obtained. Reports of the trials are published from time to time in the Society's JOURNAL.

## TRIAL OF GARDEN AND LAWN SPRINKLERS.

A trial of all types of sprinkling apparatus suitable for gardens and lawns will be held on April 29, 1936. The regulations governing this trial may be obtained from the Secretary of the Royal Horticultural Society, and further announcements will be made under the Special Notices to Fellows which appear in the JOURNAL.

## DISTRIBUTION OF SURPLUS PLANTS.†

Every year in March surplus plants and seeds are distributed to those Fellows who apply for them. Of many varieties the stock is limited, and the application forms are therefore collected, and from time to time are thrown into ballots and then drawn at random. The demands of each list are then satisfied as far as the available stock permits, and those Fellows who are disappointed by not receiving the plants for which they ask, must remember that there is no other method of treating all alike.

Fellows are asked to remember that the plants will necessarily be small and need careful handling when received. It is obvious that owing to their numbers the plants distributed could not be kept in the Gardens and grown on until they had reached a large size.

All application forms should be returned before the end of February, and no application can be entertained which is received after the end of April.

\* See above for quantities to be sent, and dates when they are required. Senders are urgently asked to consult the list which asks for certain plants, etc., to be sent a year or two in advance of that in which they will be judged.

† These are plants which are surplus to the requirements of the Wisley Gardens, and as the Gardens become fully planted the number available may be diminished.

The Society does not pay the cost of packing and carriage. The parcels must be sent by post, the postage being prepaid by the Fellows themselves. Directions as to the amount of the remittance to be sent for this purpose will be found on the application forms for plants, and Fellows are requested to follow out all the directions there printed carefully.

Fellows residing beyond a radius of thirty-five miles from London are permitted to choose double the number of plants to which they would otherwise be entitled. Fellows residing abroad, subscribing one guinea per annum, are allowed twenty packets of seeds, and higher rates of subscriptions in proportion.

Fellows residing outside the United Kingdom and Ireland may apply for seeds on the list on the form provided, but plants cannot be sent to them owing either to difficulty of transport or to Government restrictions. Endeavour will, however, be made to procure for them to a reasonable extent any rare or unusual seeds which they cannot procure in the country where they live.

No plants will be sent to Fellows whose subscriptions are in arrear, or who do not fill up their forms properly.

## EXAMINATIONS IN HORTICULTURE.

The Society conducts several examinations in horticulture, and the regulations and syllabus for any of them can be obtained by writing to the Secretary, R.H.S. Offices, Vincent Square, Westminster, S.W. 1.

The dates \* for these examinations are given in the Calendar.

## NATIONAL DIPLOMA IN HORTICULTURE.

Written Examinations : Preliminary, Final.

Practical Examinations : Preliminary, Final.

This is the highest examination in horticulture conducted by the Society, and was established in 1912, with the sanction of the Board of Agriculture, as a test of real professional ability.

Among those for whose benefit the Diploma was established are the following : Florists, Fruit Growers, Gardeners, Horticultural Inspectors, Horticultural Instructors,† Landscape Gardeners, Market Gardeners, Nurserymen, Public-Park Gardeners and Seedsmen.

The examination is designed to test, first, a candidate's practical knowledge and, secondly, his acquaintance with the principles underlying garden practice. The examiners will do their best to discourage " cramming," and to insist on practical experience. Books are valuable only when used intelligently to supplement experience.

\* These dates are subject to alteration.

† This does not include a School Master or Mistress who is engaged in teaching other subjects in schools, but applies only to persons whose chief work in life is devoted to giving instruction in horticulture. The examination is for the horticultural profession only.

## TEACHERS' EXAMINATIONS IN SCHOOL AND COTTAGE GARDENING.

Preliminary Examination : Written.

Advanced Examination : Written and Practical.

This examination is not exclusively confined to members of the scholastic profession, but is open to all persons who can furnish a satisfactory certificate of having done practical work. Candidates in both the preliminary and advanced examinations must satisfy the examiners that they have had practical gardening experience.

## GENERAL EXAMINATION.

General Examination for Seniors (18 years of age and over).

General Examination for Juniors (under 18 years).

This examination is held by the Royal Horticultural Society to assist the efforts of County Councils, Technical Institutes, Schools, Gardeners' Mutual Improvement Societies and other bodies to promote instruction in practical horticulture, and in the hope of rendering such instruction definite and effective.

EXAMINATION IN HORTICULTURE FOR STUDENTS IN FARM  
INSTITUTES.

A new examination is being instituted open only to students who have taken at least one year's course in horticultural work and in the principles underlying horticultural practice in an approved institution. Alternative syllabuses have been prepared, and the examination will consist of both written and practical parts. Particulars of this examination may be had at the Institutions concerned.

## BRITISH FLORAL ART DIPLOMA.

This examination was established in 1933 with the object of encouraging and stimulating interest in this craft by the establishment of a Diploma.

The examination is open to both men and women ; the date of the 1936 examination is given in the Calendar.

There is no age limit, but the number of candidates accepted for each examination will be limited.

There are both practical and written examinations, and Diplomas will be awarded to successful candidates.

The examination is intended primarily for florists and florists' assistants, but is not confined to members of the florists' trade.

### AWARDS AND MEDALS.

The following awards are made by the Council :—

#### CERTIFICATES.

The awards given to plants, flowers, fruits and vegetables are :—

1. **FIRST CLASS CERTIFICATE.**—Instituted 1859. Given on the recommendation of the Fruit and Vegetable, Floral, Orchid, Narcissus and Tulip, and the Joint Committees to plants, flowers, fruits and vegetables of great excellence.

2. **AWARD OF MERIT.**—Instituted 1888. Given on the recommendation of the Fruit and Vegetable, Floral, Orchid, Narcissus and Tulip, and the Joint Committees to plants, flowers, fruits and vegetables which show a sufficiently distinct advance on their predecessors.

3. **HIGHLY COMMENDED.**

4. **COMMENDED.**

These two Awards are given on the recommendation of the Fruit and Vegetable, Floral, Orchid, Narcissus and Tulip, and the Joint Committees to noteworthy plants, flowers, fruits and vegetables after trial at Wisley or elsewhere.

5. **PRELIMINARY COMMENDATION.**—Instituted 1931. Given at Shows on the recommendation of the Floral, Orchid, Narcissus and Tulip, and the Joint Committees to seedlings and new plants of promise.

6. **BOTANICAL CERTIFICATE.**—Instituted 1878. Given on the recommendation of the Scientific Committee to plants of botanical interest.

7. **AWARD OF GARDEN MERIT.**—Instituted 1921. Given on the recommendation of the Wisley Advisory Committee to plants which either are well known to the Council, Committees and Garden Staff, or have been tested and grown at Wisley in the same manner as they would have been grown in a private garden, and have proved to be excellent for ordinary garden or greenhouse use.

A plant that has received this award is not thereby precluded from receiving other awards.

The following awards are given to individuals :—

8. **CERTIFICATE OF APPRECIATION.**—Instituted 1908. Given on the recommendation of the Scientific Committee to persons whose work is of scientific interest from a horticultural point of view, or is such as may be reasonably expected to assist in the improvement of a strain or in creating a new break.

9. **CERTIFICATE OF CULTURAL COMMENDATION.**—Instituted 1872. Given on the recommendation of the Fruit and Vegetable, Floral, Orchid, Narcissus and Tulip, and the Joint Committees to growers whose exhibits show evidence of great cultural skill.

10. **CERTIFICATE OF DILIGENT INTEREST.**—Instituted 1910. Specially intended to encourage the upkeep of small gardens, plots and window boxes, and the cultivation of plants in pots by adults and children.

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The following awards are given to Sundries after trial on the recommendation of the Wisley Advisory Committee :—

(a) **AWARD OF MERIT.**

(b) **HIGHLY COMMENDED.**

(c) **COMMENDED.**

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#### MEDALS.

1. **THE LAWRENCE MEDAL.**—Instituted in 1906 to celebrate Sir Trevor Lawrence's twenty-one years' tenure of office as President of the Society. Awarded



directly by the Council annually for the best exhibit shown to the Society during the year. No exhibitor may receive this gold medal more than once in three years.

2. THE GOLD MEDAL.—Instituted in 1898. Re-designed in 1929. Awarded for exhibits of special excellence.

3. THE FLORA MEDAL.—Instituted in 1836. Awarded for exhibits of flowers and ornamental plants. Struck in bronze, silver and silver-gilt.

4. THE BANKSIAN MEDAL.—Instituted in 1820, in commemoration of Sir Joseph Banks, P.R.S., one of the founders of the Society. Awarded for exhibits of flowers and ornamental plants. Struck in bronze, silver and silver-gilt.

5. THE HOGG MEDAL.—Instituted in 1898 in commemoration of Dr. Robert Hogg, the great pomologist, sometime Secretary of the Society. Awarded for exhibits of fruit. Struck in bronze, silver and silver-gilt.

6. THE KNIGHTIAN MEDAL.—Instituted in 1836 in commemoration of Thomas Andrew Knight, F.R.S., President of the Society, 1811 to 1838. Awarded for exhibits of vegetables. Struck in bronze, silver and silver-gilt.

7. THE LINDLEY MEDAL.—Instituted in 1866 in commemoration of Dr. John Lindley, F.R.S., sometime Secretary of the Society. Awarded for exhibits of a plant or plants of special interest or beauty or showing exceptional skill in cultivation, and for educational exhibits. Struck in bronze, silver and silver-gilt.

8. THE GRENFELL MEDAL.—Instituted in 1919 in commemoration of Field-Marshal Lord Grenfell, President of the Society, 1913 to 1919. Awarded for exhibits of pictures, photographs or objects of a similar nature of horticultural or botanical interest. Struck in bronze, silver and silver-gilt.

9. THE WILLIAMS MEMORIAL MEDAL.—Instituted in 1896 by the Trustees of the Williams Memorial Fund in commemoration of B. S. Williams. Re-designed in 1927. Awarded directly by the Council for a group of plants and/or cut blooms of one genus which show excellence in cultivation. Fruit and vegetables are excepted. Two medals in gold are annually available for award.

10. THE SANDER MEDAL.—Instituted in 1923 and presented by the firm of Messrs. Sander & Sons in memory of H. F. C. Sander, F.L.S., V.M.H., the founder of the firm. Awarded to the exhibitor of the best new greenhouse plant shown to the Society during the year. Struck in gold.

11. THE GEORGE MOORE MEDAL.—Instituted in 1926 and presented by the late G. F. Moore, V.M.H. Awarded to the exhibitor of the best new *Cypripedium* shown to the Society during the year. Struck in gold.

12. THE HOLFORD MEDAL.—Presented by the Executors of the late Sir George Holford in 1928. Awarded for the best exhibit of plants and/or flowers (fruit and vegetables excluded) shown by an amateur during the year in the Society's Halls. Struck in gold.

13. THE SEWELL MEDAL.—Instituted in 1929 and presented by the late A. J. Sewell. Awarded for exhibits of plants suitable for the rock garden or alpine house. Struck in gold. In 1936 five medals are offered for award, two on April 21, two on May 5, and one on June 9. One medal is offered on each date for an amateur's exhibit, and on each of the first two dates one medal is also offered for a horticultural trader's exhibit. On May 5 the medals are offered under special conditions given in the schedule of the Alpine Conference Show. On the other dates each exhibit must consist of six pots or pans not exceeding 12 inches in diameter. Only one subject may be shown in each pot or pan. It is not necessary that the plants should have been grown in the receptacles in which they are shown and, if desired, plants may be lifted and potted for the purposes of the competition. Not fewer than four plants in each exhibit must be in bloom, and plants which are not in bloom should possess decorative value when shown. The scale of points for judging will be as follows: Suitability, 24 points; Rarity, 18 points; Cultivation, 24 points. Entries for the medals offered on April 21 and June 9 must be made on special forms obtainable from the Secretary, by whom the completed forms must be received not later than by the first post on the Wednesday preceding the show.

14. **THE VEITCH MEMORIAL MEDAL.**—Instituted in 1870 in commemoration of James Veitch of Chelsea. In 1922 the Veitch Memorial Trust was vested in the Council of the Society. Awards of medals and prizes are made annually to those who have helped the advancement of the science and practice of horticulture, and for special exhibits. Struck in bronze, silver and gold.

Any medal awarded at one of the Society's Meetings is awarded to the exhibitor and for a particular exhibit. The Award may not be advertised by anyone other than the exhibitor, and the exhibitor may only advertise the Award by using the terms of the Award card, i.e. by quoting the words, "for an exhibit of Begonias," or "for an exhibit of Delphiniums," or as the case may be.

The Council, having ascertained that the majority of firms who exhibit at the Society's Meetings do not desire to possess many medals of the same grade, has decided that the first time a trade firm is awarded a medal it will be forwarded, but no medal of the same grade will be sent afterwards unless application is made within a year from the date of the award. Medals will never be sent out unengraved.

### CUPS.

#### CHALLENGE CUPS.

The following cups are offered for award at the Society's Meetings. A challenge cup, unless otherwise stated, will be held for one year by the winner, who will be required to give a guarantee for its return in good condition. The winner will receive a certificate recording his success and, except where a replica of the cup is supplied, his gardener will receive an appropriate silver Hogg, Knightian or Banksian Medal. The decision of the Council is final and any cup may be withheld at its discretion.

1. **THE AFFILIATED SOCIETIES' CUP.**—Founded in 1908 by the Society and offered for the best collection of fruit shown by an Affiliated Society in the special class at the Fruit and Vegetable Show on October 6, 1936. For conditions see special schedule.

2. **THE CAIN CUP.**—Presented by Sir Charles Nall-Cain, Bt. (Lord Brocket) in 1920. Offered for the best exhibit shown by an amateur at the Great Spring Show at Chelsea. Applications for space should be made on the form in the schedule.

3. **THE CLAY CHALLENGE CUP.**—Presented by Messrs. Clay in 1913. Offered to the raiser of a rose of good form and colour, not in commerce before the current year, and possessing the true old rose scent, such as may be found in the old Cabbage or Provence Rose, in 'General Jacqueminot,' 'Marie Baumann,' 'Duke of Wellington,' 'General McArthur,' etc. The scent known as "tea rose" is not, for the purposes of this competition, to be counted the true old rose scent. Not more than three different varieties may be shown by one competitor. At least three and not more than six blooms or trusses of each variety will be required, together with a plant in flower and bud. The cup will be awarded only once for the same rose. Open for competition to trade and amateur growers at the Fortnightly Show on July 21, 1936. Entries must be received not later than by the first post on the Wednesday preceding the Show, on special forms obtainable from the Secretary.

4. **THE ENGLEHEART CUP.**—Founded in 1913 by the Society and offered at the annual Daffodil Show for one stem of each of twelve varieties raised by the exhibitor. See special schedule.

5. **THE FOREMARKE CHALLENGE CUP.**—Presented by Sir Francis Burdett, Bt., in 1919. Offered for twenty spikes of named Gladioli in not less than ten varieties and not more than two spikes of any one variety. Open for competition to trade and amateur growers at the Fortnightly Show on August 18, 1936. Entries must be received not later than by the first post on the Wednesday preceding the Show, on special forms obtainable from the Secretary.

6. **THE GEORGE MONRO MEMORIAL CUP.**—Presented in 1921 by Mr. George Monro and his brothers in memory of their father. Offered for the best exhibit of grapes shown by an amateur at the Fruit and Vegetable Show on October 6, 1936. The conditions of the competition will be found in the special schedule.

7. **THE GORDON-LENNOX CUP.**—Presented by Lady Algernon Gordon-Lennox in 1913. Offered for the most meritorious exhibit of fruit shown by an

amateur at the Fruit and Vegetable Show on October 6, 1936. Conditions will be found in the schedule. The winner's gardener will receive a replica of the cup presented by Lady Algernon Gordon-Lennox.

8. THE ORCHID CHALLENGE CUPS.—Presented by the Orchid Trade. An exhibitor winning a cup three times retains the cup in perpetuity.

- (a) A CHALLENGE CUP for the best group of orchids exhibited at the Great Spring Show, Chelsea, by an amateur in a space not exceeding 100 square feet.
- (b) A CHALLENGE CUP for the best group of orchids exhibited at the Great Spring Show, Chelsea, in a space not exceeding 60 square feet by an amateur who employs not more than three assistants in the orchid houses, including the head gardener.

Any competitor may enter for either of the above cups, but not for both in any one year. Applications for space should be made on the form in the schedule.

- (c) A CHALLENGE CUP for the best group of orchids exhibited at the Fortnightly Show on October 27 and 28, 1936, in a space not exceeding 60 square feet, by an amateur who employs not more than three assistants in the orchid houses, including the head gardener. Entries must be received not later than by the first post on the Wednesday preceding the Show, on special forms obtainable from the Secretary.

9. THE R.H.S. VEGETABLE CHALLENGE CUP.—Founded in 1910. Offered at the Fruit and Vegetable Show on October 6, 1936, to the competitor who secures the greatest number of first-prize points for exhibits of vegetables.

10. THE SHERWOOD CUP.—Presented in 1920 by the members of the Sherwood family in memory of N. N. Sherwood. Offered for award by the Council directly for the most meritorious exhibit at the Great Spring Show at Chelsea. Applications for space should be made on the form in the schedule.

## CUPS AND TROPHIES TO BE WON OUTRIGHT.

11. THE REGINALD CORY CUP.—Founded in 1923 by Reginald Cory, and presented annually by Mrs. R. Cory. The cup is given with the view of encouraging the production of hardy hybrids of garden origin, and will be awarded only to the raiser of a plant that is the result of an intentional cross. Only a hybrid of which one parent is a true species is eligible, and it must have been exhibited at one of the Society's Shows during the current year. Hybrids of annuals and biennials do not come under the scope of the award.

12. THE CYPRIPEDIUM TROPHY.—A silver trophy, presented by the Orchid Trade, is offered for award at the Fortnightly Show on January 28, 1936, for an exhibit of 25 *Cypripediums* (species or hybrids) staged by an amateur. Entry forms may be had on application to the Secretary, and must be returned not later than the first post on Wednesday, January 22.

13. A SILVER CUP FOR DAFFODILS.—A silver cup, presented by Messrs. Barr & Sons, Ltd., is offered for award at the Daffodil Show, April 16 and 17, 1936, to the competitor who obtains the highest total number of prize-points in the single bloom classes for amateurs. (See special schedule.)

14. THE ODONTOGLOSSUM TROPHY.—A silver trophy, presented by the Orchid Trade, is offered for award at the Fortnightly Show on April 21, 1936, for an exhibit of 25 *Odontoglossums* (species or hybrids, including *Odontiodas*, etc.) staged by an amateur. Entry forms may be had on application to the Secretary, and must be returned not later than the first post on Wednesday, April 15, 1936.

15. ORCHID TROPHIES, presented by the Orchid Trade for competition at the Great Spring Show at Chelsea in 1936.

- (a) A Silver Trophy for the best twelve orchids, not more than two of any one genus, exhibited by an amateur who employs not more than two growers, including the head gardener, in his orchid houses.
- (b) A Silver Trophy for the best six orchids exhibited by an amateur who employs not more than one orchid grower or gardener.

Applications for space should be made on the form in the schedule.

Two similar trophies, presented by the Orchid Trade, are offered for competition under the same conditions at the Fortnightly Show on October 27 and 28, 1936. Entries must be received not later than by the first post on the Wednesday preceding the Show, on special forms obtainable from the Secretary.

16. THE RIDDELL TROPHY FOR VEGETABLES.—A silver trophy is provided each year from a fund established in 1931 by Lord Riddell for the encouragement of the cultivation and exhibition of vegetables. In 1936 the trophy is offered for award in the class for a table of vegetables at the Fruit and Vegetable Show. (See special schedule.)

17. THE SUTTON VEGETABLE CUPS.—Messrs. Sutton & Sons, Ltd., present annually two cups for vegetables.

One is offered for award for the best group of vegetables shown by an amateur at the Great Spring Show at Chelsea. (See special schedule.)

The other is offered for the best exhibit of twelve distinct kinds shown by an amateur in the special class at the Fruit and Vegetable Show. (See special schedule.)

18. A SILVER TROPHY FOR CACTI AND SUCCULENTS.—A silver trophy provided from Mrs. Sherman Hoyt's Prize Fund is offered for the best group of cacti and/or succulents staged on a table space with a frontage of 6 feet and a depth of 3 feet at the Amateurs' Flower Show on June 30, 1936. (See special schedule.)

### THE JONES-BATEMAN CUP.

Presented by Miss L. Jones-Bateman of Cae Glas, Abergelle, in 1920, for the encouragement of fruit production. Offered triennially for original research which has added to our knowledge of cultivation, genetics, or other matters relating to fruit growing. The cup is held by the winner for three years, and on being relinquished the holder receives the Hogg Medal in gold. Particulars of competition may be obtained on application to the Secretary. The Cup is available for competition in 1936.

### THE LODER RHODODENDRON CUP.

Presented in 1921 by Mr. G. W. E. Loder (Lord Wakehurst) in memory of his brother, Sir Edmund Loder, Bt. The cup will be awarded annually, but not more than once in seven years to the same individual. In awarding it the judges will consider, not merely floral display, but the value to horticulture of the work of the recipient, whether such work shall include the production of flowers or not. Of the five judges, three will be appointed by the Royal Horticultural Society and two by the Rhododendron Society. The award will be made in October of each year. The cup is held by the winner for one year.

### PETER BARR MEMORIAL CUP.

Presented in 1912 by the Trustees of the Peter Barr Memorial Fund in commemoration of Peter Barr, V.M.H. Awarded every year on the recommendation of the Narcissus Committee to anyone who in the Committee's opinion has done good work of some kind in connexion with daffodils. The cup is held by the winner for one year.

## EXHIBITIONS: GENERAL NOTES.\*

SHOWS have been arranged for the dates given in the Calendar, but the Council reserves the right to alter the list in any way that may from time to time seem to be for the interest of the Society. All persons, whether Fellows of the Society or not, unless excluded by some special regulation, are invited to exhibit. Schedules containing special regulations are issued for the Daffodil Show, the Early Market Produce Show, the Alpine Conference Show, the Great Spring Show, the Amateurs' Flower Show, and the Fruit and Vegetable Show.

Those who desire to exhibit at a Fortnightly Meeting at the Halls must give notice in writing to the Secretary, Royal Horticultural Society, Vincent Square, Westminster, S.W. 1, not later than by the first post on the Wednesday before the Meeting at which they wish to exhibit, stating the nature of the proposed exhibit and how much space it will occupy. Entry forms may be obtained from the Secretary, and exhibitors are requested to use them. Letters will be sent to exhibitors on the Wednesday before the Meeting, informing them what space has been allotted. If no letter is received by the Friday before the Meeting the exhibitor should at once communicate with the Secretary. There are no entry fees, nor are there any charges for space or staging for exhibits of plants, flowers, fruit, vegetables, pictures, plans, or models. A charge is made for space for exhibits of horticultural sundries at the Great Spring Show at Chelsea, but not at the Halls. The Council reserves to itself the right to refuse any application for space, and, in the event of any such refusal, it is not to be required to give any reason or explanation. The allotment of space, both as regards area and position, will be in accordance with the discretion of the Council, and exhibitors must be content to abide loyally by its decision.

Fellows are specially invited to exhibit interesting or well-grown plants, flowers, fruits or vegetables, and any Fellow who desires to stage an exhibit of not more than three pots, vases, or dishes may do so at any Fortnightly Meeting, although he has not applied for space beforehand. Such exhibits must be entered with the clerk at the Small Exhibits Table by noon on the morning of the Meeting, and he will provide exhibitors' cards and stage the exhibits. Exhibitors are not permitted to place on this special table any notices or leaflets, nor may any orders be booked there. Exhibits staged under this regulation may be considered for Certificates of Cultural Commendation.

The Society's officers will, if necessary, unpack and stage small exhibits if the Secretary has been notified beforehand of their coming and of the owner's inability to accompany them, but in no case can the

\* A copy of the complete regulations for exhibitions will be sent on application to the Secretary.

Society undertake or be responsible for their repacking or return. All parcels sent by rail or post must be sent carriage paid and at the risk of the sender, addressed to the Secretary, Royal Horticultural Society, Vincent Square, Westminster, S.W. 1. A separate notification must be sent by post at the same time.

Exhibitors may, generally, begin staging at 2 P.M. on the day before a Fortnightly Meeting and continue until 10 P.M., when the lights will be turned out and the Hall closed. After 10 P.M. no goods can be admitted until the next morning. Staging may be resumed at 6.30 A.M. on the day of the Meeting, and all exhibits must be ready for inspection by 11.30 A.M. At special Shows exhibits must be ready for inspection by the time given in the particular schedule. Vases, 6 inches and 9 inches in height, are provided by the Society. Exhibitors are at liberty to borrow them in return for a deposit of 2s. 6d. a dozen, which is refunded when the vases are returned in good order at the end of the meeting. White plates, 10 inches in diameter, may be borrowed from the Society by exhibitors free of charge.

Every exhibit (except pictures, plans, photographs, models and horticultural sundries) must be entered with the Secretary of one or other of the Committees (see pp. 40-52), viz.: the Fruit and Vegetable, the Floral (which deals with flowers, foliage plants, trees and shrubs), the Orchid, the Narcissus and Tulip, or the Scientific Committee. Exhibits intended for one Committee may not be mixed with those intended for another. Fruits and vegetables may not be combined in one exhibit, and flowers may not be mixed with either, but foliage, such as that of asparagus, or small ferns, may be placed between the dishes. Tomatos rank as vegetables. Decorative vegetables, such as coloured kales, must be shown as vegetables and not mixed with flowers. Table decorations, bouquets, wreaths and sprays of flowers are excluded. Plants and produce exhibited to show the effect of different manures and soils are considered to be sundries and may only be exhibited as such. Mushroom spawn may be shown, but only among the sundries. Neither artificial nor dyed or surface-coloured flowers or foliage may be exhibited. No dormant bulbs or corms, and no plants ordinarily grown for their flowers or fruits, but not in flower or fruit, can be admitted to the Society's Meetings, unless specially permitted by the regulations or as horticultural sundries. Miniature gardens (other than "trough gardens" used for the cultivation of alpine which are difficult to grow) may only be shown as sundries.

Pictures and photographs of plants, flowers, and gardens, and plans and models of gardens, may be exhibited at the Society's fortnightly shows during November, December, January and February. Only works which are definitely of horticultural or botanical interest are invited. Paintings of flowers should be at least life-size; miniatures are unsuitable for the Society's exhibitions. Pictures executed in needlework or modelled in paper, and all fanciful or fancy-work objects, pictures, calendars, Christmas cards and similar objects are also unsuit-

able and may not be shown. Sundries may be shown in the Halls during December and January. As in 1936 there is only one show in December, sundries will be admitted on November 24, if space permits. Sundries may also be exhibited at the Great Spring Show at Chelsea. Only sundries of a distinctly horticultural nature may be shown. Neither raffia in the form of dolls or other fancy figures, pot-pourri, scent, ladies' smocks, nor embroidered or other fancy aprons are regarded as horticultural.

Only actual exhibitors, and such assistants as may be necessary for the arrangement of the exhibits, will be admitted before the exhibition is opened to the public. All persons, except such as may be retained by the Society, must retire at the time fixed for judging. Exhibitors' passes will be issued when necessary. Photographs may be taken at the Society's exhibitions only by those holding photography permits issued by the Secretary. Smoking is strictly prohibited in the Halls during the hours of the exhibitions.

After judging has taken place, nothing exhibited may be altered or removed until the close of the Show, except by permission of the Secretary. This does not apply to faded flowers, which should be replaced. Nothing exhibited may be removed from the Meetings until after the time of closing without special permission in writing. Exhibitors are forbidden to sell plants, flowers, fruit, vegetables or other articles for removal during the Meeting. The door-keepers have instructions to see that this rule is observed. In order not to deter the owners of new or special plants from submitting them to the Committees for award, the Council has decided that written application may be made to the Society for leave to remove such plants at 5 P.M. on the first day of any two-day Meeting at the Society's Hall. The Council hopes that sparing use will be made of this privilege, and that application will be made only in cases of urgent necessity. Nothing may be removed from an exhibit under this regulation until the written application has been signed by the Secretary. All goods must be removed from the Halls by 9 P.M. on the evening when the Show closes, unless special arrangements have been made with the Secretary. Anything left on the premises remains there at the owner's sole risk.

All exhibits, personal property, etc., shall be at the risk of the exhibitors, and the Society shall not be liable for compensation for loss or damage by theft, fire, water, accident, the requirements of the London County Council, or any other cause whatsoever. Should a Show from any cause not be held, no exhibitor shall have any claim on the Society or its officers for loss, damage, interest, or compensation. Exhibitors will be wholly responsible for any claim made by their employees under the Employers' Liability Acts or the Workmen's Compensation Act, etc. The Society has no responsibility to any but its own employees.

## THE COMMITTEES AND THEIR WORK.

COMMITTEES are appointed annually to meet in connexion with the Society's Shows and other activities. Some are nominated entirely by the Council, while others are appointed jointly by the Council and the governing bodies of allied societies. One of the principal objects of these Committees is to encourage the introduction of new species of plants and the production of new and improved varieties of decorative plants, flowers, fruits and vegetables, by examining and reporting upon such as may be submitted either at exhibitions or for trial. Awards are made by the Council to meritorious objects upon the recommendations of these Committees. Another function of the Committees is to collect and disseminate information about plants, flowers, fruits, vegetables and other objects of horticultural interest, including information regarding the classification and nomenclature of garden plants, and the incidence and control of diseases and pests. Certain Committees report upon the merits of non-competitive exhibits staged in the Exhibition Halls at Fortnightly Shows, and awards made by the Council are based largely on the Committees' recommendations.

In connexion with the submission of new plants to the Committees for certificate or for selection for trial, each plant must be entered with the Secretary of the appropriate Committee, who will say where the plant should be placed. Forms for this purpose may be obtained from the Society's Office before the Committee Meetings, or from the Secretaries of the Committees on the mornings of the Committee Meetings. All plants submitted to the Committees should be named as a means of future identification. If the exhibitor believes that the plant has a name, although it is unknown to him, the words "Name unknown" should be written on the entry form in the place provided for the name, and the Committee will then endeavour to identify the plant. If the plant is of garden origin, it should be named by its owner or raiser before it is submitted to the Committee. The names must conform to the Rules of Nomenclature adopted at the Ninth International Horticultural Congress held in London in 1930 (see p. 38). No award will be made to anything without a name. If the naming is in doubt, the award may be made subject to the verification of the name, and if the proposed name does not conform to the Rules of Nomenclature, any award made will be subject to the alteration of the name. Exhibitors are particularly requested to supply the information required by the entry form, and also any additional particulars which they may think interesting for publication. They will also greatly facilitate the work of the Committees by sending specimens of well-known varieties for comparison.



In considering a new plant it is laid down—(a) that no recommendation for a First Class Certificate or an Award of Merit shall be made to the Council unless at least six members vote for it ; (b) that no recommendation for an Award shall be made unless the number of votes cast in favour of it is at least double the number recorded against it ; and (c) that while the merits of an exhibit shown by a member of the Committee, or in which any member of the Committee is professionally interested, are under discussion, the member concerned must withdraw and not take part in the voting.

Specimens of plants that have received Awards or which have been selected for trial will be placed on the New-Plant Stand in the Hall. Exhibitors entering new plants before the Committees must understand before doing so that if the variety is selected for trial, they tacitly agree to send the number of plants or seeds of it required for trial the following year, and that if any Award is made, they give their consent to the object being painted or photographed for the Society.

## THE NAMING OF PLANTS.

NAMES are given to plants so that when they are spoken or written about there may be no confusion as to the particular plant referred to. Every plant must therefore bear one name only, which must be universally accepted.

At the International Horticultural Conferences of London in 1930, Paris in 1932, and Rome in 1935, the nomenclature of garden plants was fully discussed and general agreement was reached on most matters that relate to the naming of garden plants.

The principles governing the naming of plants by botanists were accepted as the basis for the naming of plants of garden origin, these principles being :

1. A plant can bear but one valid name.
2. The valid name is the earliest which conforms to the accepted Rules of Nomenclature.

Names of species and botanical varieties are framed according to the Rules of Botanical Nomenclature agreed at the Botanical Congress of Vienna in 1905 and revised at the Congresses of Brussels in 1910, Cambridge in 1930, and Amsterdam in 1935.

Briefly the botanical name of a species consists of two words of Latin form. The first is that of the genus to which the plant belongs, written with an initial capital letter; the second, the earliest specific name given by Linnæus in 1753 or by botanists subsequently, so long as it conforms with the rules, written usually with a small initial letter (e.g. *Berberis aggregata*). A capital initial letter is, however, given where specific names are derived from names of persons (but not places) (e.g. *Berberis Wilsonae*, *Campanula Allionii*) or are those of old genera (e.g. *Crataegus Oxyacantha*, *Ranunculus Flammula*). The Paris Conference recommends that for horticultural purposes all specific names should be written with a small initial letter.\* The gender of the specific name is the same as that of the genus (e.g. *Ranunculus parnassifolius*, *Primula japonica*, *Arum maculatum*, but most trees are regarded as feminine, so *Quercus sessiliflora* and *Fagus sylvatica* are correct).

For a full discussion of these botanical names the "Rules" should be consulted.

In order to obtain uniformity in the use of generic names, a list of the genera which are sometimes divided by botanists has been drawn up and recommendations are made as to the name to be retained in horticulture. These names are chosen in conformity with the Rules and apply only where differences of treatment are given by botanists. At the Horticultural Congress in Rome in 1935 a list of specific names of plants of horticultural interest was agreed for international use for the ensuing six years, and in addition certain lists of names of garden varieties were also adopted as standards for future use.

Names of botanical varieties follow the name of the species to which they belong. Thus, e.g., the botanical varieties of *Narcissus triandrus* would be *Narcissus triandrus* var. *albus*, *N. triandrus* var. *calathinus*, *N. triandrus* var. *concolor*, and so on. These varietal names follow the same rules as specific names.

Names of species and botanical varieties are thus fully provided for.

Plants raised in gardens as seedlings or sports of these species or as hybrids between species often have to be named by non-botanical people, and the following rules, agreed to at the International Horticultural Conferences of London and Paris, are for their guidance. They are based on the principles and rules which have been briefly outlined.

- (a) The name of a horticultural variety should be placed after that of the species to which it belongs, and its status should, or may, be indicated by the contraction "var." Examples are given below.
- (b) The varietal name should be of Latin form only when it expresses some character of the plant, e.g. *nanus*, *fastigiatus*, *albus*, or its place of origin, e.g. *hevensis*.

The use of Latin proper names for horticultural varieties is not permissible, e.g. *Iris pallida Smithii* would be an inadmissible name for a garden variety.

- (c) The name will thus usually be a "fancy" name, beginning with a capital letter, e.g. *Galega officinalis* var. 'George Hartland', not *Galega officinalis* var. *Hartlandii*; *Dianthus deltoides* var. 'Brilliant', not *Dianthus deltoides* var. *brilliantissimus*; *Pea* 'Masterpiece.'

\* This recommendation follows the practice of zoologists in naming animals. For the present the Society thinks it better to follow the recommendation in the "Rules of Botanical Nomenclature" in its own publications.

- (d) Varietal names must not be translated when transferred from other languages, but must be preserved in the language in which they were originally described. Where desirable a translation may be placed in brackets after the varietal name.
- (e) As far as possible names of horticultural varieties should consist of a single word; the employment of not more than three words is permitted as a maximum.
- (1) A varietal name in use for one variety of a kind of plant should not be used again for another variety of that kind, even though it may be attached to a different species.  
That is, the use of the name *Narcissus Pseudonarcissus* 'Victoria,' should preclude the use of 'Victoria' as a varietal name for any other species of *Narcissus*, such as *Narcissus poeticus* 'Victoria.' Similarly there should be but one *Iris* 'Bridesmaid,' one *Plum* 'Superb' and so on.
  - (2) Varietal names likely to be confused with one another should be avoided. For instance, the use of the name 'Alexander' should preclude the use of 'Alexandra,' 'Alexandria,' and 'Alexandrina' as varietal names for the same kind of plant.
  - (3) Where personal names are used to designate varieties, the prefixes "Mr.," "Mrs.," "Miss," and their equivalents should be avoided.
  - (4) Excessively long words and words difficult to pronounce should be avoided in coining varietal names.
  - (5) The articles "a" and "the" and their equivalents should be avoided in all languages when they do not form an integral part of the substantive, e.g. 'Colonel,' not 'The Colonel'; 'Giant,' not 'The Giant'; 'Bride,' not 'The Bride.'
  - (6) Existing names in common use should not be altered to conform to these rules, but attention should be paid to them in all new names proposed.
- (f) The names of horticultural hybrids are formed in the same way as those of horticultural varieties (see paras. a-e).  
[Hybrids are indicated by the multiplication sign  $\times$  placed before the name of the hybrid.]
- (g) The "genus" of bigeneric hybrids (i.e. hybrids between species of two different genera) is designated by a formula showing the parent genera in alphabetical order, and where necessary by a name compounded of the names of both genera, e.g. *Laeliocattleya*, *Urceocharis*, *Chionoscilla*.
- (h) The "genus" of multigeneric hybrids (i.e. hybrids between species of three or more genera) is also designated by a formula and/or a conventional name, preferably that of a distinguished person to which is added the termination "ara," e.g. *Potinara*, *Vuylestekheara*. The names of trigeneric hybrids already in use, e.g. *Brassolaeliocattleya*, should be retained. All hybrids in which the same genera are combined receive the same generic name, no matter how they were combined, e.g. the same generic name would apply to all combinations of the genera *Brassavola*, *Cattleya*, *Epidendrum* and *Laelia*.
- (i) All plants raised by crossing the same two species of plants receive the same specific name, variations between the seedlings being indicated where necessary by varietal names framed as already described. In practice in cross-bred plants, the specific name is frequently omitted, e.g. *Iris* 'Ambassadeur.'
- (j) In order to be valid, a name must be published.
- (k) The publication of a name of a horticultural variety or hybrid is effected by a recognizable description, with or without a figure, in any language written in Roman characters.
- (l) The description must appear in a recognized horticultural or botanical periodical, or in a monograph or other scientific publication, or in a dated horticultural catalogue.
- (m) The mention of a variety without description in a catalogue, or in the report of an exhibition, is not valid publication, even if a figure is given. It is desirable that descriptions of new varieties in horticultural catalogues should also be published in periodical horticultural papers.

## SCIENTIFIC COMMITTEE FOR 1936.

The Scientific Committee reports upon diseases, pests, newly imported plants, first hybrids between species, curious plants, inventions and such other objects of horticultural interest and value as may be brought before it by Fellows and by other Committees of the Society, deals with the determination of doubtful plants and their correct nomenclature, and considers proposals and makes recommendations for Botanical Certificates and Certificates of Appreciation. Fellows are therefore strongly urged to send specimens, with explanatory notes, of any new plants, of attacks of insects or fungi, or of other similar troubles on which they would like to obtain the opinion of the Committee. As full reports as possible will be published in the Society's JOURNAL and forwarded to the senders. All communications should be addressed to "The Secretary of the Scientific Committee, Royal Horticultural Society, Vincent Square, Westminster, S.W. 1," and must reach the Society's offices not later than 2 P.M. on the day of the Meeting.

In considering the recommendation of the Botanical Certificate, regard is paid to (a) the special botanical interest of the plant exhibited; and (b) the desirability of encouraging the introduction and exhibition of novelties, even though they may not be of immediate commercial value, nor of a specially decorative character. Peculiarity of morphological or anatomical construction, physiological endowments, or adaptation to varying conditions; novelty, whether of introduction or of cultural origin; geographical distribution; potential value for garden or economic uses are all matters to be taken into account.

## CHAIRMAN.

BOWLES, E. A., M.A., F.L.S., F.R.E.S., V.M.H., Myddelton House, Waltham Cross.

## VICE-CHAIRMEN.

COTTON, A. D., O.B.E., F.L.S., The Herbarium, Royal Botanic Gardens, Kew.  
RENDLE, A. B., M.A., D.Sc., F.R.S., F.L.S., V.M.H., Talland, The Mount, Fetcham Park, Leatherhead, Surrey.

CHITTENDEN, F. J., F.L.S., V.M.H., R.H.S. Offices. (*Secretary.*)

ARKWRIGHT, Sir JOHN S., J.P., D.L., Kinsham Court, Presteign, Radnorshire.  
ARMSTRONG, Prof. H. E., LL.D., F.R.S., 55 Granville Park, Lewisham, S.E. 13.  
BAKER, E. G., 3 Cumberland Road, Kew, Surrey.  
BAKER, F. J., A.R.C.S., Fisherswood, Sharnal Street, Hoo, Rochester, Kent.  
BAKER, W. G., The Botanic Garden, Oxford.  
BALFOUR, F. R. S., M.A., D.L., J.P., V.M.H., 13 Collingham Gardens, S.W. 5.  
BARKER, Prof. B. T. P., M.A., University of Bristol Research Station, Long Ashton, Bristol.  
BARNES, Dr. B., Department of Biology, Chelsea Polytechnic, Manresa Road, S.W. 3.  
BESANT, J. W., Botanic Gardens, Glasnevin, Dublin, N.W. 3.  
BEWLEY, W. F., C.B.E., D.Sc., Experimental and Research Station, Cheshunt, Herts.  
BLACKMAN, Prof. V. H., M.A., Sc.D., F.R.S., Imperial College of Science, S.W. 7.  
BLAIR, K. G., Sc.D., F.R.E.S., British Museum (Natural History), Cromwell Road, S.W. 7.  
CRANE, M. B., A.L.S., John Innes Horticultural Institution, Mostyn Road, Merton Park, S.W. 19.  
FARMER, Sir JOHN B. LL.D., D.Sc., F.R.S., V.M.H. St Leonards, Weston Rd., Bath.  
GROVE, A., F.L.S., V.M.H., Branstone Lodge, Kew Road, Kew, Surrey.  
HALES, W., A.L.S., V.M.H., Chelsea Physic Garden, S.W. 3.  
HALL, Sir DANIEL, K.C.B., LL.D., D.Sc., F.R.S., V.M.H., John Innes Horticultural Institution, Mostyn Road, Merton Park, S.W. 19.  
HANBURY, F. J., F.L.S., F.R.E.S., V.M.H., Brockhurst, East Grinstead, Sussex.  
HILL, Sir ARTHUR W., K.C.M.G., M.A., Sc.D., F.R.S., F.L.S., V.M.H., Royal Botanic Gardens, Kew, Surrey.  
HOOPER, CECIL H., F.L.S., F.S.I., Oxenturn, Wye, Kent.  
HOSKING, A., Crossriggs, Poltmore Road, Guildford, Surrey.

- HURST, C. C., Sc.D., Ph.D., F.L.S., D.L., J.P., 50 Knighton Drive, Leicester.  
 JACKSON, A. BRUCE, A.L.S., 3 The Avenue, Kew Gardens, Surrey.  
 KEEBLE, Sir FREDERICK, C.B.E., M.A., Sc.D., F.R.S., F.L.S., Hamels, Boar's Hill, Oxford.  
 MARSDEN-JONES, E. M., F.L.S., The Potterne Biological Station, Devizes, Wilts.  
 ODELL, J. W., 116 Welldon Crescent, Harrow, Middlesex.  
 PERCIVAL, Prof. J., M.A., Sc.D., F.L.S., Leighton, Shinfield, Reading, Berks.  
 PRAIN, Lieut.-Col. Sir DAVID, C.M.G., C.I.E., LL.D., F.R.S., F.L.S., V.M.H., The Well Farm, Warlingham, Surrey.  
 PRESTON, F. G., University Botanic Garden, Cambridge.  
 RAMSBOTTOM, J., O.B.E., M.A., F.L.S., British Museum (Natural History), Cromwell Road, S.W. 7.  
 RUSSELL, Sir E. JOHN, D.Sc., F.R.S., Rothamsted Experimental Station, Harpenden, Herts.  
 SALISBURY, Dr. E. J., F.R.S., University College, Gower Street, W.C. 1.  
 SALMON, Prof. E. S., F.L.S., South-Eastern Agricultural College, Wye, Ashford, Kent.  
 SMITH, Sir WILLIAM WRIGHT, M.A., F.R.S.E., F.L.S., V.M.H., Royal Botanic Garden, Edinburgh, 4.  
 VOELCKER, J. A., C.I.E., M.A., Ph.D., F.I.C., F.L.S., 1 Tudor Street, E.C. 4.  
 WAKEHURST, Lord, F.L.S., Wakehurst Place, Ardingly, Sussex.  
 WEISS, Prof. F. E., D.Sc., LL.D., F.R.S., F.L.S., Easedale, Woodway, Merton, near Guildford, Surrey.  
 WILSON, GURNEY, F.L.S., c/o R.H.S. Offices.  
 WORSDELL, W. C., 57 Cresswell Road, East Twickenham, Middlesex.  
 WORSLEY, A., J.P., Mandeville House, Isleworth, Middlesex.

NOTE.—Members of the Council are Members of this Committee, and Chairmen of Standing and Joint Committees are *ex-officio* members.

The Committee will meet at 4 P.M. on the first day of all Fortnightly Meetings.

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## FRUIT AND VEGETABLE COMMITTEE FOR 1936.

### CHAIRMAN.

BUNYARD, E. A., F.L.S., Allington, Maidstone, Kent.

### VICE-CHAIRMEN.

NIX, C. G. A., V.M.H., Tilgate, Crawley, Sussex.

POUPART, W., V.M.H., Ferndale, Rydens Road, Walton-on-Thames, Surrey.

RAWES, A. N., R.H.S. Gardens, Wisley. (*Secretary*.)

BARNETT, H. T., Westwood House, Tilehurst, Berks.

BASHAM, JOSEPH, Fair Oak Nurseries, Bassaleg, near Newport, Mon.

BOSTOCK, F., Pitsford House, Northampton.

BULLOCK, A., Copped Hall Gardens, Epping, Essex.

CRANE, M. B., A.L.S., John Innes Horticultural Institution, Mostyn Road, Merton Park, S.W. 19.

DIVERS, W. H., V.M.H., Westdean, Hook, near Surbiton, Surrey.

EARL, W. J., Knowsley Gardens, Prescott, Lancs.

FALCONER, A., Secretary's Office, Stamford Park, Stalybridge, Cheshire.

GILES, W. F., Furzebank, 38 Redlands Road, Reading, Berks.

GOODE, F., Brocket Hall Gardens, Welwyn, Herts.

HALL, H. J., The Gardens, Harewood, near Leeds.

HALL, R. H., The Gardens, Hatfield House, Hatfield, Herts.

HOLLOWAY, W. H., The Gardens, Tewin Water, Welwyn, Herts.

JORDAN, F., V.M.H., Yewdene, Edenbridge, Kent.

KELF, GEO., 140 Ivy Road, Cricklewood, N.W. 2.

LAXTON, E. A. L., V.M.H., 63 High Street, Bedford.

LOBJOIT, Sir WILLIAM G., O.B.E., J.P., V.M.H., Oakdene, Wooburn, High Wycombe, Bucks.

MARKHAM, H., Wrotham Park Gardens, Barnet, Herts.

METCALFE, A. W., Luton Hoo Gardens, Luton, Beds.

MODRAL, W. C., The Gardens, Old Warden Park, Biggleswade, Beds.

- NEAL, E., The Gardens, Tilgate, Crawley, Sussex.  
 NEAME, THOMAS, The Offices, Macknade, Faversham, Kent.  
 POUPART, A., Dovers, Rainham, Essex.  
 PRINCE, H., 119 St. Peter's Road, Earley, Reading, Berks.  
 RICHARDS, J. M., The Gardens, Gatton Park, Reigate, Surrey.  
 SECRETT, F. A., F.L.S., Holly Lodge Farm, Rydens Road, Walton-on-Thames, Surrey.  
 SMITH, A. C., Estate Office, Hexton Manor, Hitchin, Herts.  
 STREETER, F., Petworth Park Gardens, Petworth, Sussex.  
 TAYLOR, H. V., O.B.E., B.Sc., Ministry of Agriculture and Fisheries, S.W. 1.  
 TOMALIN, T. E., Stansted Park Gardens, Rowlands Castle, Hants.  
 TUCKETT, P. DEBELL, 17 Durham Villas, Kensington, W. 8.  
 WESTON, J. G., The Gardens, Chatsworth, Bakewell, Derbyshire.  
 WILSON, JAMES, The Gardens, Trent Park, New Barnet, Herts.  
 WOODWARD, J. G., Barham Court Gardens, Teston, Maidstone, Kent.

NOTE.—Members of the Council are Members of this Committee.

The Committee will meet :

at 12 NOON on the first day of all Fortnightly Meetings ; at the Early Produce Show Thursday, April 16 ; at the Fruit and Vegetable Show on Tuesday, October 6, and at 4 P.M. on Tuesday, May 19 at Chelsea.

Entries for the Chelsea Show must be handed in by 11.45 A.M. on Tuesday, May 19 ; at other meetings by 11.30 A.M.

All fruits for certificates must be ripe or in such a condition that their quality may be estimated. To permit a correct description being drawn up, a sufficient sample must be sent for tasting, together with leaves (if available), and a small branch to show the growth. Of apples, pears, peaches, nectarines, apricots, and plums—not fewer than nine must be sent ; of damsons and bullaces—thirty fruits ; of cherries and raspberries—fifty fruits ; of strawberries—twenty fruits ; of gooseberries—thirty fruits ; of red and white currants—thirty bunches ; of black currants—one pound ; of nuts—one pound ; of tomatos—two plants in fruit. Details of the origin and chief characteristics of the variety, together with the age of the tree, must be given on the entry form. In the case of peaches and nectarines, the size of the flowers must be stated.

A First Class Certificate can only be awarded to a variety which has received an Award of Merit, and when its growth and cropping habits are known to several Members of the Committee. If necessary the Chairman will appoint a Committee of three to inspect and report upon the growing tree. Promising varieties of hardy fruits are recommended for the trials for commercial purposes at Wisley.

Awards are not made to the following plants until their cropping qualities and distinctive merits have been ascertained by trial at Wisley :—Beans, Brassicas, Cucumbers, Melons, Peas, Potatos, Tomatos, and similar fruits and vegetables. Awards are not recommended in London to plants which can be, and usually are, raised each year from seed and brought to maturity within a year from the sowing of the seed. Nor are awards recommended independently in London to plants which are usually perpetuated by seed if the class to which they belong is under trial at Wisley, has been tried in the previous year, or is on the Trials Calendar for the ensuing year. Awards to plants commonly grown from seed each year are given to the strain and not to the individual plants.

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#### FLORAL COMMITTEE A FOR 1936.

Floral Committee A deals with Florists' Flowers and Plants, except Orchids, Narcissi and Tulips, Dahlias, Delphiniums, Irises, Perpetual Flowering and Border Carnations and Picotees. For these see the Special or Joint Committees.

#### CHAIRMAN.

BRIDGEFORD, J. M., 27 Drury Lane, Covent Garden, W.C. 2.

#### VICE-CHAIRMEN.

INGAMELLS, D., 27 Catherine Street, Covent Garden Market, W.C. 2.

LEAK, G. W., V.M.H., Flint House, Lynn Road, Wisbech, Cambs.

CARTWRIGHT, W. D., R.H.S. Gardens, Wisley. (*Secretary.*)

ALLAN, D., c/o Dobbie's Seed Farms, Marks Tey, Essex.

ALLWOOD, M. C., F.L.S., Wivelsfield Nurseries, Haywards Heath, Sussex.

CAMPBELL, D., Park Superintendent's Office, Inner Circle, Regent's Park, N.W. 1.  
 CHURCHER, Major GEO., Beckworth, Lindfield, Haywards Heath, Sussex.  
 CRANE, D. B., 50 Cholmeley Crescent, Cholmeley Park, Highgate, N. 6.  
 DARLINGTON, H. R., M.A., F.L.S., Park House, Potters Bar, Middlesex.  
 DAWKINS, A., 408 King's Road, Chelsea, S.W. 10.  
 DICKSON, HUGH, c/o T. Cullen & Sons, Witham, Essex.  
 ENGELMANN, C., Saffron Walden, Essex.  
 GINGELL, W. B., 26 Minard Road, Catford, S.E. 6.  
 JAMES, E. R., Iwerne, London Road, Reading, Berks.  
 LANGDON, C. F., V.M.H., Twerton Hill Nursery, Bath, Somerset.  
 PAGE, COURTNEY, 117 Victoria Street, S.W. 1.  
 RIDING, JAS. B., The Nurseries, Chingford, E. 4.  
 ROSCOE, V. L., c/o Hurst & Son, 152 Houndsditch, E.C. 3.  
 SIMMONS, D. W., 11 Harlesden Road, St. Albans, Herts.  
 SMITH, Mrs. LINDSAY, Postford House, Chilworth, Surrey.  
 STEVENSON, T., Colham Green Nurseries, Hillingdon, Middlesex.  
 TRACEY, Mrs. I. A., High Hall, Wimborne, Dorset.  
 TRESEDER, F. G., The Nurseries, Cardiff.  
 WELLS, BEN., Hardy Plant Nurseries, Merstham, Surrey.  
 WEST, J. T., Tower Hill, Brentwood, Essex.  
 WIGHTMAN, Mrs., The Garden House, Bengoe, Hertford, Herts.  
 WILKIN, H. T., c/o Carter's Tested Seeds, Ltd., Raynes Park, S.W. 20.

NOTE.—Members of the Council are Members of this Committee.

The Committee will meet :

at 12.15 P.M. on the first day of all Fortnightly Meetings; at the Amateurs' Flower Show on Tuesday, June 30; at the Fruit and Vegetable Show on Tuesday, October 6; and at 4 P.M. at Chelsea on Tuesday, May 19.

Entries must be handed in to the Secretary of the Committee before 11.45 A.M. on all occasions when the Committee meets.

The number of specimens required varies according to the heading under which an award is sought; for an award as a show flower, at least three open blooms, either cut or on a plant or plants, must be shown; for an award as a variety for cutting or for market, at least sufficient cut flowers to fill a vase, and in the case of a rose or chrysanthemum, a plant in bloom; for an award as an ornamental pot-plant, at least three plants in pots, one of which, in the case of a chrysanthemum, must be shown without any disbudding while the other two should be somewhat disbudded; for an award as a bedding plant, one plant will usually be sufficient; and for an award as a variety for the herbaceous border in all practicable cases at least one growing plant will be required, but cut specimens, if sufficient, will be admissible when the habit of the plant is well known.

The following florists' flowers and plants are given awards (except Preliminary Commendation) only after trial at Wisley:—Anemone (Japanese), Aster (Michaelmas Daisy), Aubrietia, Alpine Auricula, Chrysanthemum (early flowering, for garden decoration), Cistus, Dianthus (Pinks), Fuchsia, Gladiolus, Helianthemum, Hemerocallis, Kniphofia, Lupinus (perennial), Phlox (herbaceous and alpine), Primrose, Pyrethrum, Veronica (herbaceous), Viola. When any of these plants is submitted to the Committee in London, and considered worthy, it is selected for trial at Wisley.

No award, except Preliminary Commendation, is recommended in London to plants which can be, and usually are, raised each year from seed and flowered within a year from the sowing of the seed; and no award, except Preliminary Commendation, is recommended independently in London to plants which are usually perpetuated by seed if the class to which they belong is under trial at Wisley, has been tried in the previous year, or is on the Trials Calendar for the ensuing year. All plants which receive Preliminary Commendations under this regulation are selected for trial at Wisley. Awards to plants commonly grown from seed each year are given to the strain and not to individual plants.

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#### FLORAL COMMITTEE B FOR 1936.

Floral Committee B deals with Plants other than Florists' Flowers and Plants, except Orchids other than hardy terrestrial kinds, Narcissi and Tulips, Dahlias and Delphiniums, Irises and Rhododendrons. For these see Special or Joint Committees.

# CHAIRMAN.

MUSGRAVE, C. T., V.M.H., Olivers, Hascombe, Godalming, Surrey

# VICE-CHAIRMEN.

ABERCONWAY, Lord, C.B.E., V.M.H., 38 South Street, Mayfair, W. 1.

BEAN, W. J., I.S.O., V.M.H., 2 Mortlake Road, Kew, Surrey.

BOWLES, E. A., M.A., F.L.S., F.R.E.S., V.M.H., Myddelton House, Waltham Cross, Herts.

WAKEHURST, Lord, Wakehurst Place, Ardingly, Sussex.

GOULD, N. K., R.H.S. Gardens, Wisley. (*Secretary.*)

BAKER, G. P., V.M.H., Hillside, Oakhill Road, Kippington, Sevenoaks, Kent.

BAKER, W. G., The Botanic Garden, Oxford.

BALFOUR, A. P., c/o Sutton & Sons, Ltd., Seed Trial Grounds, Slough, Bucks.

BOWES-LYON, The Hon. DAVID, St. Paul's Waldenbury, Hitchin, Herts.

BYNG OF VIMY, The Viscountess, Thorpe Hall, Thorpe-le-Soken, Essex.

CLARKE, Lt.-Col. STEPHENSON R., C.B., J.P., Borde Hill, Haywards Heath, Sussex.

COMBER, J., The Gardens, Nymans, Handcross, Sussex.

COUTTS, J., V.M.H., Royal Botanic Gardens, 197 Kew Road, Kew, Surrey.

CRANFIELD, W. B., F.L.S., V.M.H., East Lodge, Enfield Chase, Middlesex.

ELLIOTT, CLARENCE, Six Hills Nursery, Stevenage, Herts.

FARDEN, R. S., Ridgehurst, Ridgeway, Sutton, Surrey.

FENWICK, MARK, J.P., Abbotswood, Stow-on-the-Wold, Glos.

HALES, WM., A.L.S., V.M.H., Chelsea Physic Garden, S.W. 3.

HARTINGTON, The Marquess of, M.P., Churchdale Hall, near Bakewell, Derbyshire.

HAY, T., M.V.O., V.M.H., New Lodge, Hyde Park, W. 2.

INGWERTSEN, W. E. Th., Birch Farm Hardy Plant Nursery, Gravetye, East Grinstead, Sussex.

JENKINSON, Capt. R. C. H., Knap Hill Manor, near Woking, Surrey.

LAWRENCE, Lady, Riverdale, Dorking, Surrey.

MARSDEN-JONES, E. M., F.L.S., The Potterne Biological Station, Devizes, Wilts.

NOTCUTT, R. C., Woodbridge, Suffolk.

OLDHAM, W. R., J.P., Sherwood, Windlesham, Surrey.

PERRY, AMOS, Hardy Plant Farm, Enfield, Middlesex.

PRESTON, F. G., University Botanic Garden, Cambridge.

REUTHE, G., Sunnycroft, 109 Crown Lane, Bromley, Kent.

RUSSELL, L. R., V.M.H., Richmond Nurseries, Richmond, Surrey.

STANLEY, Lady BEATRIX, C.B.E., C.I., Sibbertoft Manor, Market Harborough, Leics.

STERN, Major F. C., O.B.E., M.C., F.L.S., 16 Montagu Square, W. 1.

STOKER, Dr. FRED, F.L.S., The Summit, Golding's Hill, Loughton, Essex.

STRATHCONA AND MOUNT ROYAL, Lord, 14 South Audley Street, W. 1.

WALLACE, R. W., J.P., V.M.H., The Old Gardens, Tunbridge Wells, Kent.

WILDING, E. H., Wexham Place, Stoke Poges, Bucks.

WILLIAMS, C., M.P., 59 Tufton Street, Westminster, S.W. 1.

NOTE.—Members of the Council are Members of this Committee.

The Committee will meet :

at 12.15 P.M. on the first day of all Fortnightly Meetings; at the Rhododendron Association's Show on Tuesday, April 28; at the Amateurs' Flower Show on Tuesday, June 30; at the Fruit and Vegetable Show on Tuesday, October 6; and at 4 P.M. on Tuesday, May 19, at Chelsea.

Entries must be handed in to the Secretary of the Committee before 11.45 A.M. on all occasions when the Committee meets.

The number of specimens required varies according to the heading under which an award is sought : for an award as a plant for the rock garden, for an alpine house, or for bedding, at least one plant must be shown and an alpine house plant must be shown growing in a pot or pan; for an award as a plant for the



herbaceous border or as a plant for the water garden, a growing plant is required wherever practicable, but cut specimens, if sufficient, are admissible when the habit of the plant is well known; for an award as a plant for cutting, at least sufficient cut material to fill a vase must be shown.

No award, except Preliminary Commendation, is recommended in London to plants which can be, and usually are, raised each year from seed and flowered within a year from the sowing of the seed; and no award, except Preliminary Commendation, is recommended independently in London to plants which are usually perpetuated by seed if the class to which they belong is under trial at Wisley, has been tried in the previous year, or is on the Trials Calendar for the ensuing year. All plants which receive Preliminary Commendations under this regulation will be selected for trial at Wisley. Awards to plants commonly grown from seed each year are given to the strain and not to individual plants.

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### ORCHID COMMITTEE FOR 1936.

The Orchid Committee deals with all Orchids, except hardy terrestrial species, for which see Floral Committee B.

#### CHAIRMAN.

COLMAN, Sir JEREMIAH, Bt., M.A., D.L., J.P., V.M.H., Gatton Park, Reigate, Surrey.

#### VICE-CHAIRMEN.

CLARKE, Lt.-Col. STEPHENSON R., C.B., J.P., Borde Hill, Haywards Heath, Sussex.

HANBURY, F. J., F.L.S., F.R.E.S., V.M.H., Brockhurst, East Grinstead, Sussex.

ROTHSCHILD, LIONEL DE, O.B.E., V.M.H., 18 Kensington Palace Gardens, W. 8.

WILSON, GURNEY, F.L.S., c/o R.H.S. Offices. (*Secretary.*)

ALEXANDER, H. G., V.M.H., Woodlands, Westonbirt, Tetbury, Glos.

ARMSTRONG, T., Orchidhurst, Sandhurst Park, Tunbridge Wells, Kent.

ASHTON, E. R., Broadlands, Camden Park, Tunbridge Wells, Kent.

COOKSON, CLIVE, Crescent House, Newcastle-upon-Tyne, 1.

CURTIS, C. H., F.L.S., V.M.H., 24 Boston Road, Brentford, Middlesex.

DYE, A., Tring Park Gardens, Tring, Herts.

ELLWOOD, A. G., c/o Charlesworth & Co., Ltd., Haywards Heath, Sussex.

FLORY, SYDNEY W., Orchard Nursery, Slough, Bucks.

HATCHER, W. H., Cragg Wood Nurseries, Rawdon, Leeds, Yorks.

HOLMES, Mrs. MARGOT A., 56 Avenue Road, Regent's Park, N.W. 8.

HURST, C. C., Sc.D., Ph.D., F.L.S., D.L., J.P., 50 Knighton Drive, Leicester.

JAMES, The Hon. ROBERT, St. Nicholas, Richmond, Yorks.

LAWSON, HENRY P., Lynbrook, Knaphill, Woking, Surrey.

LOW, STUART H., Bush Hill Park, Enfield, Middlesex.

McBEAN, A. A., Cooksbridge, Sussex.

MERRY, A., The Gardens, The Boxes, Pevensey Bay, near Eastbourne, Sussex.

MOORE, Dr. F. CRAVEN, Duckyls, near East Grinstead, Sussex.

MOORE, Sir FREDERICK W., M.A., F.L.S., V.M.H., Willbrook House, Rathfarnham, co. Dublin.

SANDER, FREDERICK K., The Camp, St. Albans, Herts.

SHILL, J. E., Orchid Department, Dell Park, Englefield Green, Surrey.

WILSON, E. K., Cannizaro, Wimbledon, S.W. 19.

NOTE.—Members of the Council are Members of this Committee.

The Committee will meet:

at 11.45 A.M. on the first day of all Fortnightly Meetings; at the Amateurs' Flower Show on Tuesday, June 30; at the Fruit and Vegetable Show on Tuesday, October 6; and at 2.30 P.M. on Tuesday, May 19, at Chelsea.

Entries at the Chelsea Show must be handed to the Secretary of the Committee before 11.45 A.M. and on all other days when the Committee meets before 10.30 A.M.

Usually a growing plant is required, but when the plant would have to be sent from abroad, or from such a great distance that its transport would be an unreasonable burden for the exhibitor, the Committee may regard a cut spike as sufficient.

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# NARCISSUS AND TULIP COMMITTEE FOR 1936.

## CHAIRMAN.

BOWLES, E. A., M.A., F.L.S., F.R.E.S., V.M.H., Myddelton House, Waltham Cross, Herts.

## VICE-CHAIRMEN.

ENGLEHEART, G. H., M.A., V.M.H., Little Clarendon, Dinton, Salisbury, Wilts.  
LEAK, G. W., V.M.H., Flint House, Lynn Road, Wisbech, Cambs.  
MONRO, GEORGE, C.B.E., V.M.H., 4 Tavistock Street, Covent Garden, W.C. 2.

SIMMONDS, A., N.D.H., R.H.S. Offices. (*Secretary.*)

ARKWRIGHT, Sir JOHN S., D.L., J.P., Kinsham Court, Presteign, Radnorshire.  
BARR, HERBERT R., c/o Barr & Sons, 11/13 King Street, Covent Garden, W.C. 2.  
BERKELEY, R. G., Spetchley Park, Worcester.  
BRODIE OF BRODIE, Mrs., O.B.E., Brodie Castle, Forbes, N.B.  
COPELAND, W. F. M., West View, 156 St. James Road, Southampton.  
COWEN, A., c/o J. R. Pearson & Sons, Ltd., Lowdham, Notts.  
CRANFIELD, W. B., F.L.S., V.M.H., East Lodge, Enfield Chase, Middlesex.  
CURTIS, C. H., F.L.S., V.M.H., 24 Boston Road, Brentford, Middlesex.  
DARNLEY, The Earl of, Cobham Hall, Cobham, Kent.  
FAVELL, Dr. R. V., Penberth, St. Buryan, S.O., Cornwall.  
HALL, Sir DANIEL, K.C.B., LL.D., D.Sc., F.R.S., V.M.H., John Innes Horticultural Institution, Mostyn Road, Merton Park, S.W. 19.  
HAWKER, Capt. H. G., M.A., Strode, Ermington, S. Devon.  
JONES, A. J., c/o Carters' Tested Seeds, Ltd., Ravnes Park, S.W. 20.  
MEYER, Rev. Canon ROLLO, Orchards, Alhampton, Ditchat, Somerset.  
NEEDHAM, C. W., Kelmscott, Hale, Cheshire.  
POUPART, W., V.M.H., Ferndale, Rydens Road, Walton-on-Thames, Surrey.  
RICHARDSON, J. LIONEL, Prospect House, Waterford, Ireland.  
SECRET, F. A., F.L.S., Holly Lodge Farm, Rydens Road, Walton-on-Thames, Surrey.  
SLINGER, W., c/o Donard Nursery Co., Newcastle, co. Down, Ireland.  
SMITH, H., Marken, Swanshurst Lane, Moseley, Birmingham.  
STANLEY, Lady BEATRIX, C.B.E., C.I., Sibbertoft Manor, Market Harborough, Leics.  
STERN, Major F. C., O.B.E., M.C., F.L.S., 16 Montagu Square, W. 1.  
TITCHMARSH, C. C., N.D.H., Barrow, Englishcombe, Bath, Somerset.  
WHITE, A. W., c/o J. T. White & Sons, Ltd., Daffodil Nurseries, Spalding, Lincs.  
WILLIAMS, A. M., Werrington Park, Launceston, Cornwall.  
WILSON, GUY L., The Knockan, Broughshane, co. Antrim, Ireland.

NOTE.—Members of the Council are Members of this Committee.

The Committee will meet :

at 11 A.M. on the first day of all Fortnightly Meetings during February, March, April, and May; at 12 NOON at the Daffodil Show on Thursday, April 16; and at 3 P.M. on Tuesday, May 19, at Chelsea.

Entries must be handed in to the Secretary of the Narcissus and Tulip Committee before 11 A.M. at the Daffodil Show; before 11.45 A.M. at the Chelsea Show; and before 10.30 A.M. on other occasions when the Committee meets.

The number of specimens required varies according to the award sought. For a Preliminary Commendation as a show daffodil, one stem is sufficient, but for an Award of Merit nine stems are required, and for a First Class Certificate eighteen. To be selected for trial at Kirton as a variety for cutting or for cutting from the open for market, twenty-four stems of a daffodil must be shown. In order to be selected for trial at Kirton as a daffodil for garden decoration twelve stems are sufficient. For an Award of Merit as a daffodil for cultivation in pots, pans, or bowls, two pots, pans or bowls, each with not fewer than three bulbs, must be shown, and four pots, pans or bowls are required for a First Class

Certificate. Not fewer than twelve bulbs, growing in pots, bowls or boxes, must be shown in order that a daffodil may obtain any award as a variety for forcing for market. Directions regarding the vases to be used for daffodils are given on the entry forms. Of a tulip shown as a variety for garden decoration, six stems are sufficient to obtain a Preliminary Commendation, but not fewer than twelve must be shown for an Award of Merit or a First Class Certificate. When staged as a tulip for forcing at least twelve plants must be exhibited as grown in not fewer than two pots, pans, bowls or boxes. A species or variety of a species of tulip may receive a Preliminary Commendation when only one stem is shown, but at least three stems are required for an Award of Merit or a First Class Certificate.

Trials of daffodils are carried out by the Holland County Council in co-operation with the Society at the Agricultural Institute and Experimental Station, Kirton, near Boston, Lincs. These trials are for varieties considered suitable for cutting, for cutting from the open for market or for garden decoration. Only varieties selected by the Narcissus and Tulip Committee at its meetings in London are grown in the trials at Kirton. Trials of varieties for cutting and for garden decoration are also conducted at Wisley. Trials of very early varieties considered suitable for cutting from the open for market are carried out by the Cornwall County Council in co-operation with the Society at the Experimental Station, Gulval, Penzance. Only very early varieties can be accepted for these trials, and the Education Committee of the Cornwall County Council reserves the right to refuse any entry. Those who wish to send varieties for trial at Gulval should apply for entry forms to the County Horticultural Superintendent, County Hall, Truro. An award as a variety for cutting is usually given only after trial at Kirton or Wisley. An award as a variety for cutting from the open for market is usually given only after trial at Kirton or Gulval, but an award may be given to a variety which has been shown in London and favourably reported upon by an *ad hoc* Sub-Committee after examination of the variety whilst in bloom on the premises of the owner. An award as a variety for garden decoration is usually given to a daffodil only after trial at Kirton or Wisley, but it may be given to a tulip after examination of specimens exhibited in London.

In the interests of all concerned, it is very desirable that only registered names should be used for daffodils, and the Council appeals to all raisers, and to all who purchase stocks of new varieties, to co-operate with the Society in its efforts to prevent the confusion which must inevitably arise if names are given without regard to those already in use. As soon as it is decided that a seedling is worth naming, and while the whole of the stock is in one person's hands, the proposed name should be submitted to the Secretary. Before choosing a name for submission for registration, the latest edition of The Classified List of Daffodil Names should be consulted. A registration fee of 1s. for each name should be sent with the application for registration.

## JOINT DAHLIA COMMITTEE FOR 1936.

Deals with all Dahlias.

### CHAIRMAN.

HAY, T., M.V.O., V.M.H., New Lodge, Hyde Park, W. 2

### R.H.S. REPRESENTATIVES.

COBB, A. J., The University, Reading, Berks.  
CRANE, D. B., 50 Cholmeley Crescent, Cholmeley Park, Highgate, N. 6.  
DRAYSON, G. F., 23 Palmerston Road, Buckhurst Hill, Essex.  
FIFE, WILLIAM, c/o Dobbie & Co., Ltd., Edinburgh, 7.  
RIDING, JAS. B., The Nurseries, Chingford, E. 4.  
STEWART, W., Royal Hospital, Chelsea, S.W. 3.

### NATIONAL DAHLIA SOCIETY'S REPRESENTATIVES.

ALESWORTH, F. W., 17 Avenue Road, Isleworth, Middlesex. (*Secretary*, National Dahlia Society.)  
CAMPBELL, D., Park Superintendent's Office, Inner Circle, Regent's Park, N.W. 1

CHURCHER, Major G., Beckworth, Lindfield, Sussex.  
 EMBERSON, J., Green Hayes, Lindsey Street, Epping, Essex.  
 OGG, STUART, The Grove Nurseries, Swanley, Kent.  
 WEST, J. T., Tower Hill, Brentwood, Essex.

The Committee will meet at the following times :

at 11.15 A.M. at the Fortnightly Meetings on July 7 and 21, August 5 and 18, September 1, 15 and 29, and October 13; at the Fruit and Vegetable Show on Tuesday, October 6; and at 12.15 P.M. at the National Dahlia Society's Show on Tuesday, September 8.

Entries must be handed to the Secretary of the Committee before 10.45 A.M.

On any Show-day, when no meeting of the Joint Committee has been arranged, dahlias should be entered with the Secretary of Floral Committee A.

At least three open blooms must be shown. Varieties considered worthy are selected for trial at Wisley and awards are made only after trial.

### JOINT DELPHINIUM COMMITTEE FOR 1936.

#### CHAIRMAN.

LEAK, G. W., V.M.H., Flint House, Lynn Road, Wisbech, Cambs.

#### R.H.S. REPRESENTATIVES.

CAMPBELL, D., Park Superintendent's Office, Inner Circle, Regent's Park, N.W. 1.  
 INGAMILLS, D., 27 Catherine Street, Covent Garden Market, W.C. 2.  
 JAMES, E. R., Iwerne, London Road, Reading, Berks.  
 LANGDON, C. F., V.M.H., Twerton Hill Nursery, Bath, Somerset.  
 SMITH, Mrs. LINDSAY, Postford House, Chilworth, Surrey.  
 STEVENSON, T., Colham Green Nurseries, Hillingdon, Middlesex.  
 WELLS, BEN, Hardy Plant Nurseries, Merstham, Surrey.

#### BRITISH DELPHINIUM SOCIETY'S REPRESENTATIVES.

BONES, T., 46 High Street, Cheshunt, Herts.  
 CARLILE, T., Loddon Gardens, Twyford, Berks.  
 CHAPLIN, J., c/o Chaplin Bros., Ltd., Royal Nurseries, Waltham Cross, Herts.  
 DOCWRA, Mrs. R. E., 31 Upper Brighton Road, Surbiton, Surrey.  
 HILL, C. F., Westover, Hartington Road, Hillingdon, Middlesex.  
 MACSELF, A. J., Domarin, Hamilton Road, Reading, Berks.  
 PHILLIPS, G. A., c/o Hewitt & Co., Ltd., The Nurseries, Solihull, Warwickshire.  
 ROBERTS, S. HALFORD, 85-86 New Bond Street, W. 1  
 MOIR, A. J., 3 Warwick Road, Thornton Heath, Surrey  
*Joint Hon. Secretaries, Delphinium Society.*

The Committee will meet at the following times :

at 11.15 A.M. at the Amateurs' Flower Show on Tuesday, June 30; at the Fortnightly Meetings on June 9 and 23, July 7 and 21; at 12.15 P.M. at the British Delphinium Society's Show on Thursday, July 2; and at 11.45 A.M. at the British Delphinium Society's Provincial Show at Roundhay Park, Leeds, on Tuesday, July 14.

Entries must be handed to the Secretary of the Committee before 10.45 A.M.

On any Show-day, when no meeting of the Joint Committee has been arranged, Delphiniums should be entered with the Secretary of Floral Committee A.

When exhibited as a variety for show purposes, or as a variety for garden decoration, at least three spikes of flowers, either cut or on a plant or plants, are required, and when staged as a variety for cutting, sufficient cut spikes of flowers to fill a vase must be shown.

An award as a variety for garden decoration, or as a variety for cutting, is made only after trial at Wisley. Varieties submitted to the Committee at Shows, and considered worthy, are selected for trial.

## JOINT IRIS COMMITTEE FOR 1936.

## CHAIRMAN.

STERN, Major F. C., O.B.E., M.C., F.L.S., 16 Montagu Square, W. 1.

## VICE-CHAIRMAN.

MUSGRAVE, C. T., V.M.H., Olivers, Hascombe, Godalming, Surrey.

## R.H.S. REPRESENTATIVES.

BOWES-LYON, The Hon. DAVID, St. Paul's Waldenbury, Hitchin, Herts.  
 BOWLES, E. A., M.A., F.L.S., F.R.E.S., V.M.H., Myddelton House, Waltham Cross, Herts.  
 CHRISTIE-MILLER, C. W., Swyncombe House, Henley-on-Thames, Oxon.  
 GALSWORTHY, FRANK, Green Lane Farm, Chertsey, Surrey.  
 JENKINSON, Capt. R. C. H., Knap Hill Manor, near Woking, Surrey.  
 LAWRENCE, Lady, Riverdale, Dorking, Surrey.  
 MEYER, Rev. Canon ROLLO, Orchards, Alhampton, Ditchat, Somerset.  
 PESEL, Miss L. F., The White House, Colebrook Street, Winchester.  
 WELLS, BEN, Hardy Plant Nurseries, Merstham, Surrey.

## IRIS SOCIETY'S REPRESENTATIVES.

BAKER, G. P., V.M.H., Hillside, Oakhill Road, Kippington, Sevenoaks, Kent.  
 BARR, PETER R., V.M.H., 61 Kingsfield Road, Oxhey, Herts.  
 BUNYARD, G. N., F.L.S., 10 Faraday Road, Maidstone, Kent.  
 HELLINGS, F. WYNN, Fleur de Lis, 41 Grove Way, Esher, Surrey.  
 LEVETT, Mrs. G. C., 29 Crescent Road, Kingston Hill, Surrey.  
 MURRELL, Mrs., c/o Orpington Nursery Co., Orpington, Kent.  
 PERRY, AMOS, Hardy Plant Farm, Enfield, Middlesex.  
 PILKINGTON, G. L., Lower Lee, Woolton, Liverpool. (*Secretary, Iris Society.*)  
 SPENDER, R. E. S., Halshanger, Bagleywood, Oxford.  
 WALLACE, R. W., J.P., V.M.H., The Old Gardens, Tunbridge Wells, Kent.  
 YELD, G., M.A., V.M.H., Orleton, Austen Wood Common, Gerrard's Cross, Bucks.

The Committee will meet at the following times :

at 12.45 P.M. on the first day of the Fortnightly Meetings on April 7 and 21, May 5, June 9 and 23, July 7 and 21; and at the Amateurs' Flower Show, Tuesday, June 30; at 3 P.M. on Tuesday, May 19, at Chelsea; and at 2.15 P.M. at the Iris Society's Show, Thursday, June 4.

Entries must be handed to the Secretary of the Committee by 11.45 A.M. at all meetings.

On any Show-day, when no meeting of the Joint Committee has been arranged, Irises should be entered with one of the Secretaries of the Floral Committees.

If an Iris is shown with a view to its being selected for trial, one flowering stem is usually sufficient, but in order to obtain an award as a plant for general garden use, as a plant for the rock garden, or as a variety for market, not fewer than three flowering stems must be shown. When entered as a plant for the alpine house an Iris must be represented by a plant or plants carrying not fewer than three flowering stems in all and growing in a pot or a pan, or pots or pans. If exhibited as an ornamental pot-plant the plants must be in pots.

Awards are made to species and first crosses between species when exhibited in London. Irises of garden origin (other than first crosses between species) may receive awards when exhibited in London, if considered suitable for the rock garden, alpine house, or for cultivation as ornamental pot-plants, but those which are entered as suitable for general garden use or for market, if considered worthy, are selected for trial at Wisley, a certificate of Preliminary Commendation being the only award for which they are eligible without trial.

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# JOINT SWEET PEA COMMITTEE FOR 1936.

## CHAIRMAN.

LEAK, G. W., V.M.H., Flint House, Wisbech, Cambs.

## R.H.S. REPRESENTATIVES.

ALLAN, D., c/o Dobbie's Seed Farms, Marks Tey, Essex.  
 BRIDGEFORD, J. M., 27 Drury Lane, Covent Garden, W.C. 2.  
 CAMPBELL, D., Park Superintendent's Office, Inner Circle, Regent's Park, N.W. 1.  
 CRANE, D. B., 50 Cholmeley Crescent, Cholmeley Park, Highgate, N. 6.  
 DAWKINS, A., 408 King's Road, Chelsea, S.W. 10.  
 METCALFE, A. W., Luton Hoo Gardens, Luton, Beds.  
 WILSON, J., The Gardens, Trent Park, New Barnet, Herts.

## NATIONAL SWEET PEA SOCIETY'S REPRESENTATIVES.

BARTLETT, A. C., 19 Bedford Chambers, W.C. 2. (*Secretary*, National Sweet Pea Society.)  
 BOLTON, T., c/o R. Bolton & Son, Birdbrook, Essex.  
 BURT, G. H., Grange Hill, Coggeshall, Essex.  
 GOWER, A. W., Calcot Grange Gardens, Reading, Berks.  
 JAMES, E. R., Iwerne, London Road, Reading, Berks.  
 RUNDLE, C. H., Barton Court Gardens, Canterbury, Kent.  
 STEVENSON, J., Poole Road, Wimborne, Dorset.  
 TOLMAN, G. H., The Manor Gardens, Northwood, Middlesex.

The Committee will meet at the trials at Wisley on receipt of notice.

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# JOINT RHODODENDRON COMMITTEE FOR 1936.

## CHAIRMAN.

STEVENSON, J. B., Tower Court, Ascot, Berks.

## VICE-CHAIRMEN.

WAKEHURST, Lord, Wakehurst Place, Ardingly, Sussex.  
 WILDING, E. H., Wexham Place, Stoke Poges, Bucks.

## R.H.S. REPRESENTATIVES.

BEAN, W. J., I.S.O., V.M.H., 2 Mortlake Road, Kew, Surrey.  
 CLARKE, Lt.-Col. STEPHENSON R., C.B., J.P., Borde Hill, Haywards Heath, Sussex.  
 COMBER, J., The Gardens, Nymans, Handcross, Sussex.  
 HAY, T., M.V.O., V.M.H., New Lodge, Hyde Park, W. 2.  
 JAMES, The Hon. ROBERT, St. Nicholas, Richmond, Yorks.  
 OLDHAM, W. R., J.P., Sherwood, Windlesham, Surrey.  
 PINCKNEY, G. H., c/o John Waterer, Sons & Crisp, Ltd., The Floral Mile, Twyford, Berks.  
 REUTHE, G., Sunnycroft, 109 Crown Lane, Bromley, Kent.  
 WALLACE, R. W., J.P., V.M.H., The Old Gardens, Tunbridge Wells, Kent.  
 WILLIAMS, C., M.P., 59 Tufton Street, Westminster, S.W. 1.

## RHODODENDRON ASSOCIATION'S REPRESENTATIVES.

ABERCONWAY, Lord, C.B.E., V.M.H., 38 South Street, Mayfair, W. 1.  
 CROSFIELD, J. J., Embley Park, Romsey, Hants.  
 GODMAN, Dame ALICE, D.B.E., South Lodge, Horsham, Sussex.  
 HUTCHINSON, J., LL.D., F.L.S., The Herbarium, Royal Botanic Gardens, Kew, Surrey.  
 JENKINSON, Capt. R. C. H., Knap Hill Manor, near Woking, Surrey.  
 LODER, Lady, Leonardslee, Horsham, Sussex.  
 LODER, Lt.-Col. GILES H., M.C., High Beeches, Handcross, Sussex.  
 ROSE, F. J., Townhill Park Gardens, West End, Southampton.  
 ROTHSCHILD, LIONEL DE, O.B.E., V.M.H., 18 Kensington Palace Gardens, W. 8.  
 SLOCOCK, O. C. A., Goldsworth Old Nursery, Woking, Surrey.  
 STRATHCONA AND MOUNT ROYAL, Lord, 14 South Audley Street, W. 1.

WALKER-HENEAGE-VIVIAN, Admiral A., C.B., M.V.O., D.L., Clyne Castle, Blackpill, Swansea, Glamorgan.  
WILSON, GURNEY, F.L.S., c/o R.H.S. Offices. (*Secretary*, Rhododendron Association.)

The Committee will meet at the following times :

at 11.15 A.M. at the Fortnightly Meetings on February 25, March 10 and 24, April 7 and 21, May 5, June 9 and 23; and at the Amateurs' Flower Show on Tuesday, June 30; at 12.15 P.M. at the Rhododendron Association's Show on Tuesday, April 28; and at 3 P.M. on Tuesday, May 19, at Chelsea.

Entries at the Chelsea Show must be handed to the Secretary of the Committee before 11.45 A.M.; at other meetings by 10.45 A.M.

On any Show-day, when no meeting of the Joint Committee has been arranged, rhododendrons should be entered with the Secretary of Floral Committee B.

When shown as a plant for general garden use or as a plant for the greenhouse, a cut spray or truss is usually sufficient, but if possible a plant should be shown. At least one plant is required when a rhododendron is shown as suitable for the rock garden or alpine house, and in the latter case the plant must be growing in a pot or pan.

Trials of selected garden forms of azaleas, and of hardy hybrid rhododendrons, including azaleas, raised by nurserymen, other than the results of first crosses made between species, are carried out at Exbury, and awards to these plants are made only after trial. All other rhododendron hybrids, as well as all species, are eligible for awards when exhibited in London.

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## JOINT BORDER CARNATION AND PICOTEE COMMITTEE FOR 1936.

### CHAIRMAN.

BRIDGEFORD, J. M., 27 Drury Lane, Covent Garden, W.C. 2.

### R.H.S. REPRESENTATIVES.

ALLWOOD, M. C., F.L.S., Wivelsfield Nurseries, Haywards Heath, Sussex.  
CHARRINGTON, E., Ice Wood Cottage, Limpsfield, Surrey.  
CHURCHER, Major GEORGE, Beckworth, Lindfield, Haywards Heath, Sussex.  
FAIRLIE, J., 17 Mayfield Road, Acton, W. 3.  
GIBSON, J. L., c/o Gibson (Cranleigh), Ltd., The Gardens, Cranleigh, Surrey.

### NATIONAL CARNATION AND PICOTEE SOCIETY'S REPRESENTATIVES.

GRAY, F. E., 14 Queen's Avenue, Woodford Green, Essex.  
KEEN, J. J., 54 The Avenue, Southampton.  
KNAPTON, H. A., Rosecroft, Fairfield Road, Orpington, Kent.  
MAXFIELD, S., 19B Stone Street, Gravesend, Kent.  
MUSTOW, A. E., 10 Brinkley Road, Worcester Park, Surrey. (*Secretary*, National Carnation and Picotee Society.)  
WILKINSON, Capt. E. M., Fernbank, Denville, Havant, Hants.

The Committee will meet at the following times :

at 11.30 A.M. at the Fortnightly Meetings on July 7 and 21; at 3 P.M. at the National Carnation and Picotee Society's Show on July 14; at 11.30 A.M. on July 28; and on notice at such other times as is necessary to deal with entries.

Entries must be handed to the Secretary of the Committee by 11.15 A.M. on any of the named dates, but when it is desired to submit a variety for certificate in any week for which a meeting has not been arranged the completed entry-form must reach the Secretary of the Royal Horticultural Society, or the Secretary of the National Carnation and Picotee Society, by the Tuesday in the preceding week.

Of new varieties placed before the Joint Committee not fewer than two blooms must be shown. These varieties may be selected for trial at Wisley and/or receive Preliminary Commendation. For an Award of Merit not fewer than three blooms must be shown and three plants must be growing in the trials at Wisley. A First Class Certificate will be awarded only to a variety which has previously received an Award of Merit, and at least seven blooms must be shown. In all cases, whenever possible, a growing plant should also be shown.

# JOINT PERPETUAL-FLOWERING CARNATION COMMITTEE FOR 1936.

## CHAIRMAN.

BRIDGEFORD, J. M., 27 Drury Lane, Covent Garden, W.C. 2.

## R.H.S. REPRESENTATIVES.

ALLWOOD, M. C., F.L.S., Wivelsfield Nurseries, Haywards Heath, Sussex.  
CARTER, E. R., Valhalla, Hartwood Road, Brentwood, Essex.  
COOK, L. J., 37 Drapers Road, Enfield, Middlesex.  
ENGELMANN, C., Carnation Grower, Saffron Walden, Essex.  
INGAMELLS, D., 27 Catherine Street, Covent Garden, W.C. 2.

## BRITISH CARNATION SOCIETY'S REPRESENTATIVES.

ALESWORTH, F. W., 17 Avenue Road, Isleworth, Middlesex. (*Secretary, British Carnation Society.*)  
JORDAN, F., V.M.H., Yewdene, Edenbridge, Kent.  
MASON, L., c/o H. T. Mason, Ltd., Eton Lodge, Hampton Hill, Middlesex.  
METCALFE, A. W., The Gardens, Luton Hoo, near Luton, Beds.  
WALLACE, W. E., J.P., V.M.H., Poplar Farm, Eaton Bray, Dunstable, Beds.  
WRIGHT, G. H., The Gardens, North Mymms Park, Hatfield, Herts.

The Committee will meet at the following times :

at 12 NOON at the British Carnation Society's Shows on April 21 and November 24, and at such other times as is necessary to deal with entries.

At the British Carnation Society's Shows entries must be handed to the Secretary of the Committee by 11.30 A.M. When it is desired to submit a variety for certificate at one of the Royal Horticultural Society's Fortnightly Shows, the completed entry-form must reach the Secretary of the Royal Horticultural Society or the Secretary of the British Carnation Society by the Tuesday in the preceding week.

To obtain an Award of Merit, at least three open blooms and one plant in bloom must be shown. No award will be made to a perpetual-flowering carnation until the Committee has seen it twice, once between November 1 and March 1, and once between April 1 and October 31. At least five calendar months must elapse between the dates on which a variety is exhibited. A First Class Certificate may be awarded only to a variety which has previously received an Award of Merit, and only after the Committee has inspected plants in growth between November 1 and March 31. Raisers who wish to enter a variety for a First Class Certificate must notify the Secretary of the Royal Horticultural Society, or the Secretary of the British Carnation Society, so that arrangements may be made for a visit of the Committee.

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# JOINT COMMITTEE FOR COMMERCIAL FRUIT TRIALS FOR 1936.

## CHAIRMAN.

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LOBJOIT, Sir WILLIAM G., O.B.E., J.P., V.M.H., Oakdene, Wooburn, High Wycombe, Bucks.  
TAYLOR, H. V., O.B.E., B.Sc., Ministry of Agriculture and Fisheries, 10 Whitehall Place, S.W. 1.

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MONRO, G., C.B.E., V.M.H., 4 Tavistock Street, Covent Garden, W.C. 2.

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 LANGDON, C. F., V.M.H., Twerton Hill Nursery, Bath, Somerset.  
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- TAYLOR, H. V., O.B.E., B.Sc., Ministry of Agriculture and Fisheries, 10 Whitehall Place, S.W. 1.
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PERRY, AMOS, Hardy Plant Farm, Enfield, Middlesex.

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SMITH, Sir WILLIAM WRIGHT, M.A., F.R.S.E., F.L.S., V.M.H., Royal Botanic Garden, Edinburgh, 4.

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STANLEY, Lady BEATRIX, C.B.E., C.I., Sibbertoft Manor, Market Harborough, Leics.

STOKER, Dr. FRED, F.L.S., The Summit, Golding's Hill, Loughton, Essex.

STOKE, J. E. H., Danesmere, Hereford.

TAYLOR, G. M., Links Cottage, Longniddry, East Lothian.

TROTTER, R. D., Leith Vale, Ockley, Surrey.

WALLACE, R. W., J.P., V.M.H., The Old Gardens, Tunbridge Wells, Kent.

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Established A.D. 1897, with the gracious assent of Her Majesty the late Queen Victoria in perpetual remembrance of Her Majesty's glorious reign, and to enable the Council to confer conspicuous honour on those British Horticulturists resident in the United Kingdom whom it might from time to time consider deserving of special honour at the hands of the Society. At the time of its institution the Medal was confined to 60 recipients in reference to the 60 years of Her Majesty's reign. At Her Majesty's death it seemed to the Council fitting that the number of Medallists should be increased to 63, representing the full number of the years of her reign.

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 1933 BAKER, G. P., Hillside, Oakhill Road, Kippington, Sevenoaks, Kent.  
 1927 BALFOUR, F. R. S., M.A., D.L., J.P., 13 Collingham Gardens, S.W. 5.  
 1924 BARNES, N. F., The Gardens, Eaton Hall, Chester.  
 1931 BARR, P. R., 61 Kingsfield Road, Oxhey, Herts.  
 1923 BARTHOLOMEW, A. C., 75 Tilehurst Road, Reading.  
 1917 BEAN, W. JACKSON, I.S.O., 2 Mortlake Road, Kew, Surrey.  
 1922 BILNEY, WILLIAM A., J.P., Monks View, Newbury, Berks.  
 1932 BLISS, D., Parks Department, 4 Mount Street, Swansea, Glam.  
 1922 BOSCAWEN, Rev. Canon ARTHUR T., Ludgvan Rectory, Cornwall.  
 1916 BOWLES, E. A., M.A., F.L.S., F.R.E.S., Myddelton House, Waltham Cross.  
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 1908 COLMAN, Sir JEREMIAH, Bt., M.A., D.L., J.P., Gattton Park, Reigate.  
 1933 COUTTS, J., 43 The Green, Kew, Surrey.  
 1935 CRANFIELD, W. B., F.L.S., East Lodge, Enfield Chase, Middlesex.  
 1930 CURTIS, C. H., F.L.S., 24 Boston Road, Brentford, Middlesex.  
 1931 DALLIMORE, W., I.S.O., Hanover House, The Green, Kew, Surrey.  
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 1900 ENGLEHEART, G. H., M.A., F.S.A., Dinton, Salisbury.  
 1933 FARMER, Sir JOHN, LL.D., D.Sc., F.R.S., St. Leonards, Weston Road, Bath.  
 1910 FIELDER, CHARLES R., The Bungalow, Bramshaw, Hants.  
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 1934 HALES, W., A.L.S., Chelsea Physic Garden, S.W. 3.  
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 1935 LANGDON, C. F., Twerton Hill Nursery, Bath, Somerset.  
 1932 LAXTON, E. A. L., 63 High Street, Bedford.  
 1930 LEAK, G. W., Flint House, Lynn Road, Wisbech.  
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 1932 MILLARD, F. W., Camla Gardens, Copthorne Road, Felbridge, East Grinstead, Sussex.  
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 1926 PETTIGREW, W. W., Winryl, East Close, Middleton, Bognor Regis, Sussex.  
 1922 POUPART, WILLIAM, Ferndale, Rydens Road, Walton-on-Thames.  
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 1929 ROTHSCHILD, LIONEL DE, O.B.E., 18 Kensington Palace Gardens, S.W. 8.

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 1925 SMITH, SIR WILLIAM WRIGHT, M.A., F.R.S.E., F.L.S., Royal Botanic Garden, Edinburgh.  
 1923 WALLACE, ROBERT W., J.P., The Old Gardens, Tunbridge Wells.  
 1926 WALLACE, W. E., J.P., The Nurseries, Eaton Bray, Dunstable.  
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 1926 WATKINS, A., c/o Watkins & Simpson, Ltd., 27 Drury Lane, W.C. 2.  
 1920 WHITE, EDWARD, 7 Victoria Street, S.W.  
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 1897 BARR, PETER (d. 1909).  
 1897 BARRON, ARCHIBALD F. (d. 1903).  
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 1897 BEALE, EDWARD JOHN, F.L.S. (d. 1902).  
 1906 BECKETT, EDWIN (d. 1935).  
 1902 BENNETT-POE, JOHN T., M.A. (d. 1926).  
 1897 BOXALL, W. (d. 1910).  
 1897 BULL, WILLIAM, F.L.S. (d. 1902).  
 1897 BUNYARD, GEORGE (d. 1919).  
 1897 BURBIDGE, F. W., M.A., F.L.S. (d. 1905).  
 1902 CANNELL, HENRY (d. 1914).  
 1904 CHALLIS, THOMAS (d. 1923).  
 1914 CREAL, JOSEPH (d. 1935).  
 1902 COOKE, Dr. M. C., M.A., LL.D. (d. 1914).  
 1911 COOMBER, THOMAS (d. 1926).  
 1913 CRISP, Sir FRANK (d. 1919).  
 1897 CRUMP, WILLIAM (d. 1932).  
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 1904 DEAN, ALEXANDER (d. 1912).  
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 1897 DICKSON, GEORGE (Chester) (d. 1909).  
 1897 D'OMBRAIN, Rev. H. H., M.A. (d. 1905).  
 1899 DOUGLAS, JAMES (d. 1911).  
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 1929 LAWRENCE, Sir WILLIAM, Bt. (d. 1934).  
 1907 LLEWELYN, Sir JOHN T. D., Bt., F.L.S. (d. 1927).  
 1923 LOWE, JOSEPH (d. 1929).  
 1906 LYNCH, R. IRWIN, M.A., A.L.S. (d. 1924).  
 1920 MCHATTIE, J. W. (d. 1923).  
 1897 MCINDOE, JAMES (d. 1910).  
 1909 MACKELLAR, A. C. (d. 1931).  
 1897 MARIES, CHARLES, F.L.S. (d. 1902).  
 1906 MARSHALL, WILLIAM, F.E.S. (d. 1917).  
 1902 MASSEE, GEORGE, F.L.S. (d. 1917).  
 1904 MAWLEY, EDWARD, F.R.M.S. (d. 1916).  
 1927 MILLAIS, J. G. (d. 1931).  
 1897 MILNER, HENRY ERNEST, F.L.S. (d. 1906).  
 1897 MOLYNEUX, EDWIN (d. 1921).  
 1897 MONRO, GEORGE (d. 1920).  
 1925 MOORE, G. F. (d. 1927).  
 1897 MORRIS, Sir DANIEL, K.C.M.G. (d. 1933).  
 1924 MORRIS, SYDNEY (d. 1924).  
 1925 MOUNT, GEORGE (d. 1927).  
 1897 NICHOLSON, GEORGE, F.L.S. (d. 1908).  
 1901 NORMAN, GEORGE (died 1906).  
 1897 O'BRIEN, JAMES (d. 1930).  
 1901 ORMEROD, Miss E. A., LL.D. (d. 1901).  
 1897 PAUL, GEORGE, J.P. (d. 1921).  
 1897 PAUL, WILLIAM, F.L.S. (d. 1905).  
 1911 PEARSON, ALFRED H., J.P. (d. 1930).  
 1924 PEARSON, CHARLES E. (d. 1929).  
 1914 PINWILL, Capt. W. (d. 1926).  
 1904 REDESDALE, Lord, G.C.V.O., C.B. (d. 1916).  
 1897 RIVERS, T. FRANCIS (d. 1899).  
 1925 ROCHFORD, J. (d. 1932).  
 1921 ROLFE, R. A., A.L.S. (d. 1921).  
 1917 ROLLIT, Sir A. K., D.C.L., LL.D. (d. 1922).  
 1908 ROSS, CHARLES (d. 1917).  
 1897 SANDER, FREDERICK, F.L.S. (d. 1920).  
 1897 SCHRÖDER, Baron Sir HENRY, Bt., C.V.O. (d. 1910).  
 1897 SEDEN, JOHN (d. 1920).  
 1897 SHERWOOD, N. N. (d. 1916).  
 1916 SLOCOCK, W. C. (d. 1926).  
 1897 SMITH, JAMES (d. 1903).  
 1897 SMITH, MARTIN R. (d. 1908).  
 1906 SMITH, THOMAS (d. 1919).  
 1897 SPEED, WALTER (d. 1921).  
 1927 STAPP, Dr. O., F.R.S., F.L.S. (d. 1933).  
 1897 SUTTON, A. W., J.P., F.L.S. (d. 1925).  
 1901 SWEET, JAMES (d. 1924).  
 1926 THEOBALD, Prof. F. V., M.A., F.E.S. (d. 1930).  
 1897 THOMAS, OWEN (d. 1923).  
 1897 THOMPSON, WILLIAM (d. 1903).  
 1897 THOMSON, DAVID (d. 1909).  
 1897 TURNER, HARRY (d. 1906).  
 1906 VEITCH, Sir HARRY J., F.L.S. (d. 1924).  
 1916 VEITCH, P. C. M., J.P. (d. 1929).  
 1916 WATSON, W., A.L.S. (d. 1925).  
 1927 WHITE, J. T. (d. 1930).  
 1912 WHITTON, J. (d. 1925).  
 1914 WHYTOCK, JAMES (d. 1926).  
 1912 WILKS, Rev. WILLIAM, M.A. (d. 1923).  
 1927 WILLIAMS, P. D. (d. 1935).  
 1897 WILLMOTT, Miss E., F.L.S. (d. 1934).  
 1912 WILSON, Dr. E. H., M.A. (d. 1930).  
 1897 WILSON, G. F., F.R.S., F.L.S. (d. 1902).  
 1897 WOLLEY DOD, Rev. C., M.A. (d. 1904).  
 1897 WRIGHT, JOHN (d. 1916).  
 1920 WRIGHT, SAMUEL T. (d. 1922).  
 1897 WYTHES, GEORGE (d. 1916).

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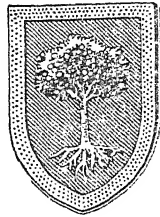
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# JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

Vol. LXI



Part 2

February 1936

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## THE CULTIVATION OF THE EREMURUS.

By F. C. STERN, F.L.S.

THE roots of *Eremurus* are peculiar and unlike the roots of other plants. Those of the larger species are best described as being in shape like an octopus, and those of the smaller kinds are like the open fingers of a hand. The centre of the flowering root is the bud or crown which forms the flower shoot of the following year : this crown is surrounded by fibre with a base which is concave and hard—a favourite resort of slugs for their winter quarters. The long fleshy roots, which are very brittle, grow from the side of the central crown below the fibre and extend like the spokes of a cartwheel all round.

*Eremurus himalaicus*, one of the species with the tallest flower stems, has roots 32 inches in diameter, and the roots of the somewhat smaller forms, such as the *Bungei-robustus* crosses, measure 20 inches across. These unusual roots need special care in planting. The crown should be planted some 4 inches below the ground, and the long octopus-like roots should lie round in a circle slightly descending from the centre. Our practice in planting is to scrape away the soil from the position where the plant is to grow, leaving a mound for the crown to rest on. It is useful to mark the crown with a thin steel or iron rod instead of a stick, which is liable to break.

*Eremuri* increase rapidly ; in two or three years the clumps should be divided. The height of the flowering spikes becomes less as the clump gets more congested. This is probably one reason why the different species have taller flower spikes in the garden than they are described as having in their natural habitat. The best way to move *Eremuri* is to scrape away the soil all round from the centre crown

till the roots are fully exposed. The clump can then be picked up and will be found to contain a number of crowns with their different roots interlaced. After the clump is dry the crowns can be separated quite easily, though care must be taken not to break the brittle roots. The best time to move them is October. The roots can be replanted at once, or can be kept in a dry shed like Dahlia roots till the spring.

There is no difficulty in growing these superb plants if properly planted in a sunny place. They need full sun and good drainage.

The genus *Eremurus* comes mainly from the higher ground stretching north-east from North Persia through Afghanistan, the Himalaya, Altai, Mongolia and Russian Turkestan. One exception is *Eremurus chinensis*, which is found in Kansu and Sechwan. Owing to the kindness of a friend, we have now raised seedlings of this uncommon species from seed collected in China. The *Eremuri* coming from the high lands in such hot countries, would naturally require full sun and good drainage; indeed it is really surprising that they are hardy in England. The dangerous time for them with regard to frost is in March and April, when their noses break through the soil—an exhilarating moment for every *Eremurus* grower; if there is rain at this time and a severe frost on top of it the crowns may get damaged. Water gets lodged in among the leaves of the crown, and, if it then freezes, the young leaves may be damaged. Some people suggest putting ashes over these growing crowns, but we have found this harmful, as it seems to encourage slugs and these do more damage than the frost. The most suitable soil is a fairly heavy loam with some lime. I think they appreciate lime, as the best plants I have seen were growing in calcareous soil.

*E. himalaicus* is the first *Eremurus* of the season to flower, at the end of May. It grows up quickly to about 7 or 8 feet and has a spike of white flowers about 3 feet long. There are two fine hybrids of this species which flower a little later than the type—*Tubergenii* with lemon-yellow flowers, and *Himrob* with pinkish flowers. The many beautiful hybrids of *E. Bungei* come into flower during the month of June. These hybrids grow from 6 to 8 feet high with spikes of flowers 3 or 4 feet long; their colours range from white and citron-yellow to deep golden-yellow and deep pink, with every variation of colour in between. The photographs which I took at Highdown last summer give an idea of the decorative effect these hybrids give in the garden. The golden-yellow 'Highdown Gold' (fig. 1) is the first of the hybrids to flower; this is followed by the deep pink 'Dawn.' As can be plainly seen in the illustration (fig. 2) this hybrid has black stems, which are an added attraction and set off the pink flowers. The black stem puzzles me very much, as none of the species, as far as we have seen them, have stems of this colour. 'Flair' is another pink hybrid with a very long flower spike; and the latest to flower are 'Golden Torch' (fig. 3) and the white *Bungei* (fig. 4).

It is a fascinating amusement to raise hybrids. One variety can be crossed with another or with the different species, or the bees, which

are very fond of the flowers, will do the hybridizing. We are trying to evolve a later-flowering race of hybrids by crossing the latest-flowering *Bungei* hybrids with the different varieties of *E. robustus*. There is no difficulty in raising the seed and growing on plants to the flowering stage. The seed ripens in September, and our practice is to sow it towards the end of January in slight heat. The seed soon germinates, producing a thick green young shoot with a fleshy root. The young shoot dies down about the end of May ; the seed pans are then knocked out and the small fleshy roots planted directly into the soil in a frame, placing them about 6 inches apart. They are left in the frame for two years and then planted out into a bed, where they will probably flower the following year or the year after. The frames are covered in November and not uncovered till the end of April, or whenever it is thought the frosts are over. The reason for this is that the young seedling *Eremurus* is precocious and is apt to make growth above ground in February. When young the seedlings are not hardy and cannot withstand frost. It is curious that these same plants, when they come to the flowering stage, are quite hardy and do not make their growth above ground till after the middle of March in an average year. We find that by transferring the seedlings from the seed pan to the frame they will make a second growth the same year and thereby gain a year towards the flowering stage. It takes about four years to flower seedlings, but one might say the first four years are the worst, for after that there should be a succession of seedlings !

There are three forms of *E. robustus* which flower at the end of June and in July. *E. robustus* is a magnificent, great strong upstanding plant, about 10 feet in height, with some 3 feet of soft pink flowers ; it always astonishes me how a plant makes this wonderful growth of stem and flower in so short a time. A variety of *E. robustus*, known as *Elwesianus*, flowers somewhat earlier than the type and has white flowers with a tinge of pink, but is not so strong a grower as *robustus*. Another variety, which came to me under the name of *tardiflorus*, is the latest of all this type to flower. It has robust growth, reaching over 10 feet high, and has pink flowers. Mr. H. G. ELWES gave me the plant under this name. It is not, however, mentioned in the monograph of the genus by O. FEDTSCHENKO, and is probably just a late-flowering variety of *E. robustus*. It comes true from seed, but we have never been able to cross it with any other species.

A great advantage about these magnificent garden plants is that there is no need to stake them ; of course they should not be planted in the windiest places, but in any fairly sheltered border they stand up without any staking and sway gracefully in the breeze. In raising hybrids there are always some plants that have weak stems : these should be got rid of and burnt at once.

There are few herbaceous plants that are more attractive as decoration for the garden, either for the herbaceous border or to grow among flowering shrubs, than the *Eremuri*.

## CONTRIBUTIONS FROM THE WISLEY LABORATORY.

### LXXV.—ANTIRRHINUM RUST: II. THE RESULTS OF SPRAYING AND DUSTING WITH FUNGICIDES.

By D. E. GREEN, M.Sc., Mycologist.

#### INTRODUCTION.

SINCE the first warning of the appearance of Antirrhinum Rust (*Puccinia Antirrhini*) in Great Britain \* the effect of the parasite on our cultivated Snapdragon has become fairly well known. The disease was noticed first in Kent in July 1933, and before the end of that year had appeared in thirteen counties in south-east England, as well as in Jersey. In 1934 it was recorded from fifteen other counties, among which, in the west, were Cornwall and the Cardiganshire coast of Wales. Although the 1935 season was not so favourable to the disease as 1934, it was reported from eight additional counties in England and Wales, from Ireland, and from the west and east coasts of Scotland (its presence being known at least as far north as Forfarshire). In the map (fig. 5) the counties shaded are those in which the disease has been observed and the year in which first reported (33 = 1933), and it is evident that it is now widely distributed in Great Britain. American investigators have been studying the disease for many years, and in this country already a good deal of work has been done.

Having regard to the severity of the disease in 1934, the Council of the Royal Horticultural Society decided that, among other experiments, an investigation should be carried out in 1935 to explore the possibility of controlling the disease by the use of fungicidal sprays or dusts. This has been done during the season, and the results are here described and discussed.

#### METHOD OF LAYING OUT THE TRIAL PLOTS.

For the purpose of the experiment it was necessary to use a variety of Antirrhinum known to be fairly susceptible to rust. The variety selected was 'Malmaison,' which had shown great susceptibility in infection experiments in 1934. The seed (kindly presented by Messrs. WATKINS & SIMPSON) was sown on March 12, in new pots, in sterilized soil (kindly given by Messrs. SUTTON & SONS), and watered in with Cheshunt compound as a further precaution. Germination was excellent and well advanced in three days. The seedlings were pricked out in seed boxes of sterilized soil, fifty seedlings

\* D. E. GREEN. "A disease of Antirrhinums new to Great Britain," Gard. Chron., vol. 94, August 12, 1933.

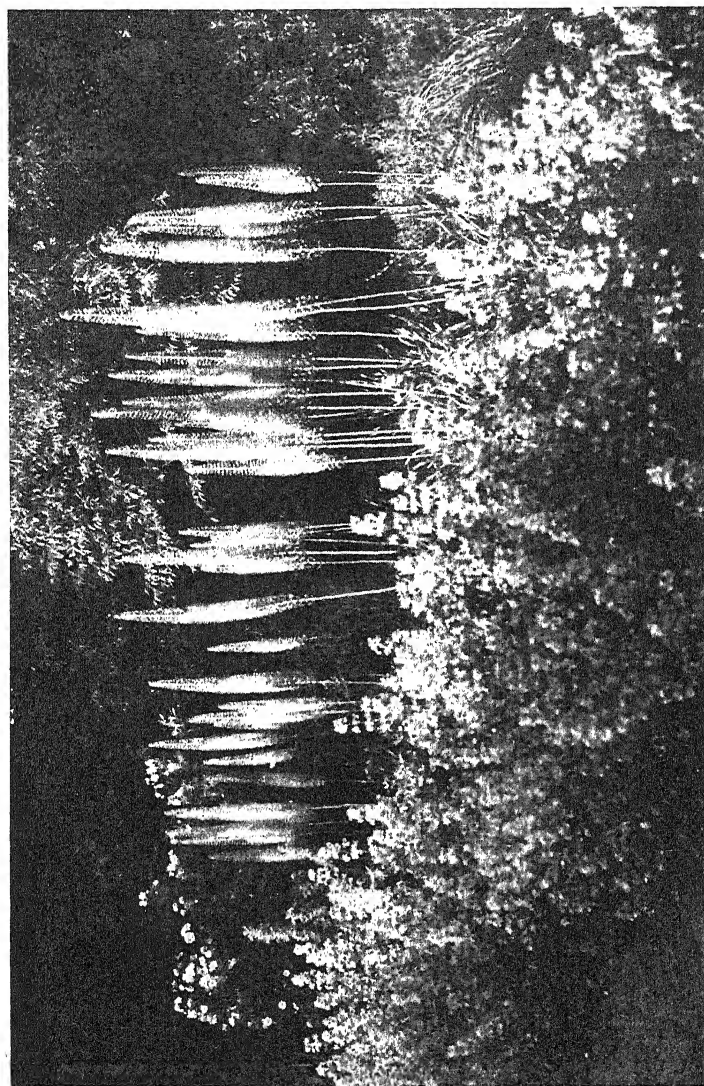


FIG. 1.—EREMURUS X 'HIGHDOWN GOLD.'  
*Pentstemon procerus* in front.

[To face p. 64.

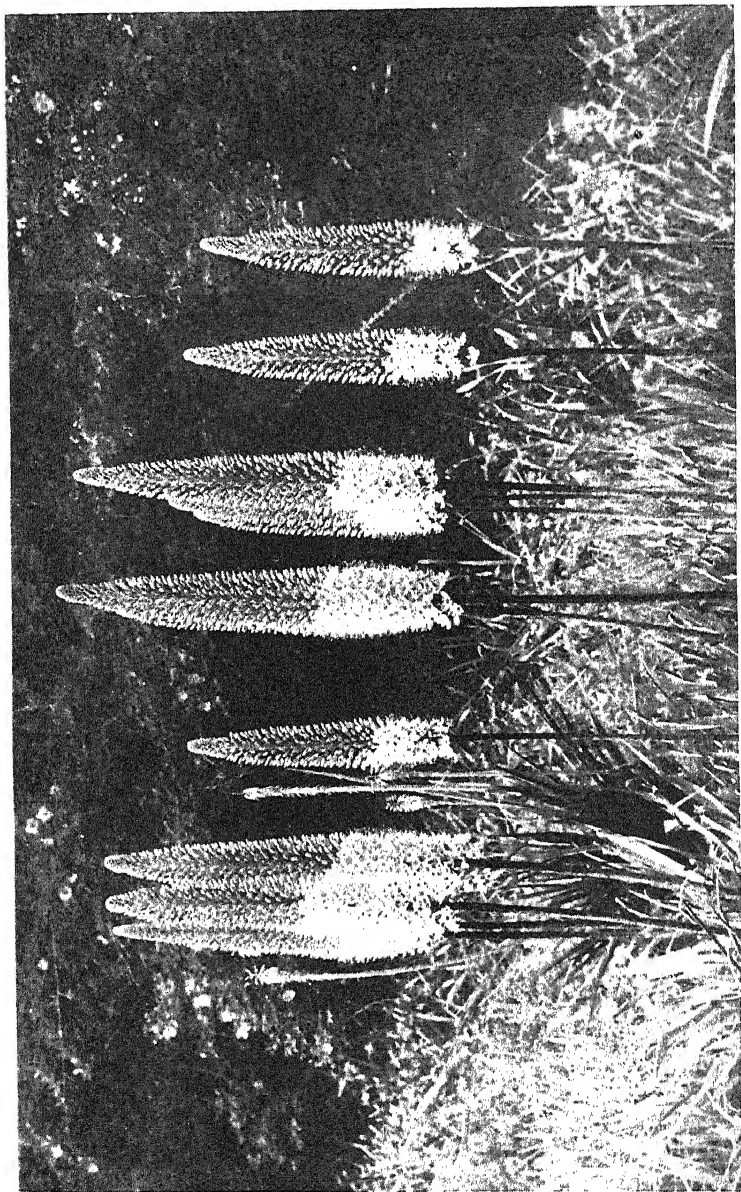


FIG. 2.—EREMURUS × 'DAWN'.

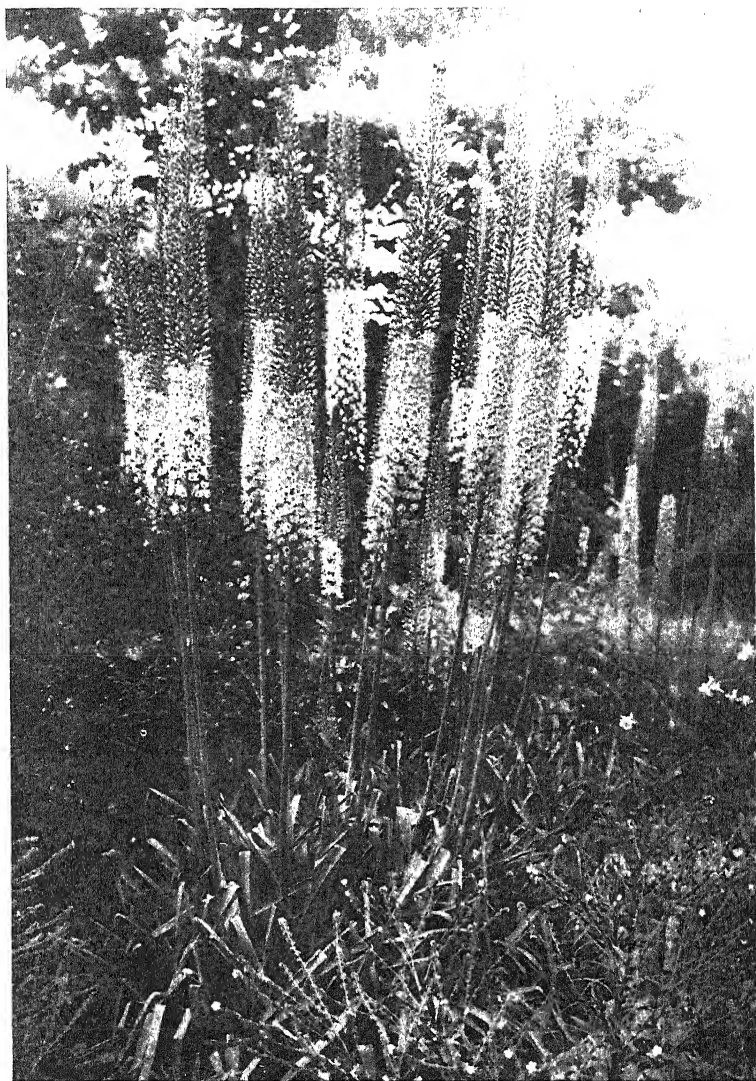


FIG. 3.—EREMURUS × 'GOLDEN TORCH.'



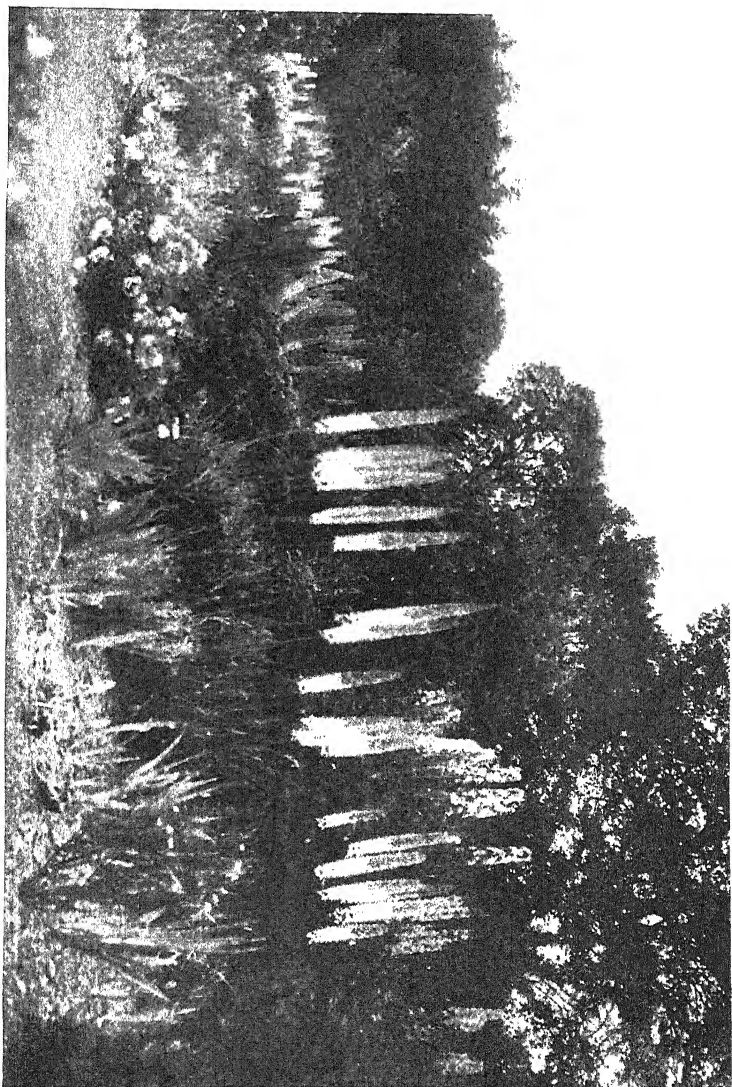


FIG. 4.—WHITE EREMURUS SEEDLINGS AT HIGHDOWN.



to each box, in which they remained until planted out, at which time examination showed that none of the young plants showed any sign

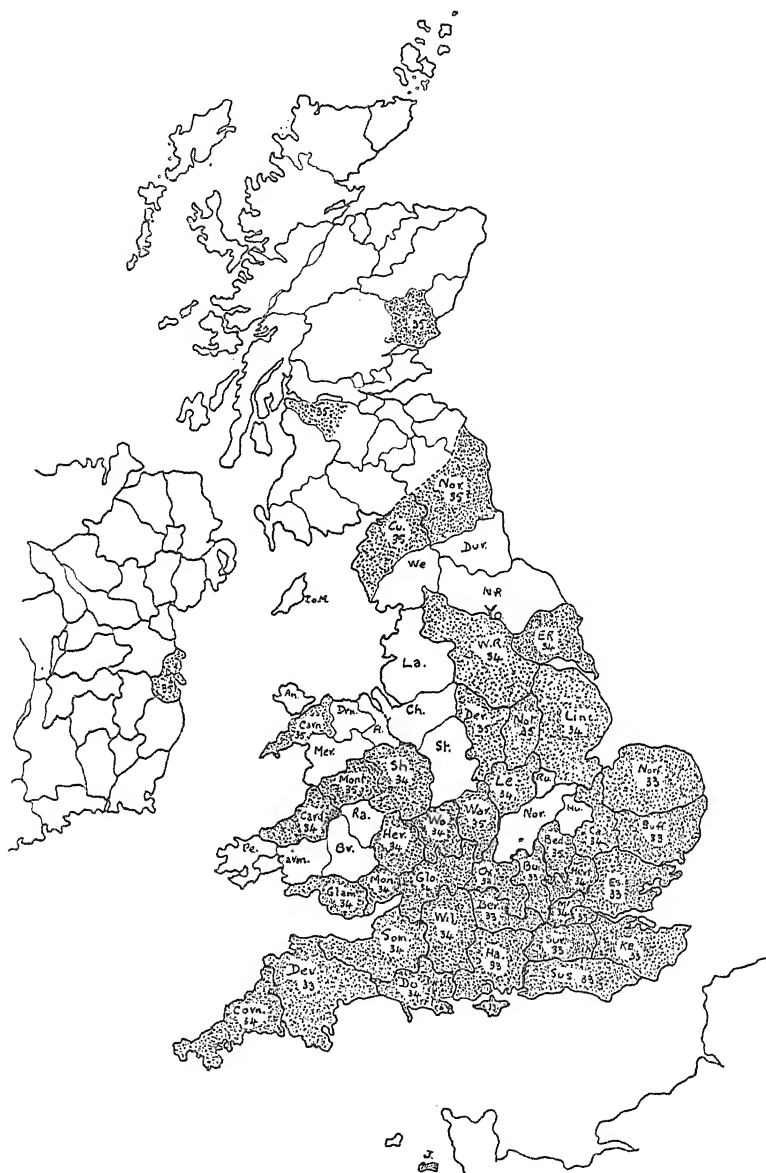


FIG. 5.—DISTRIBUTION OF ANTIRRHINUM RUST IN BRITISH ISLES.

The shaded areas show the counties from which the rust has been recorded, with the year in which the record was made. Durham should now be added.

of rust infection. This was very satisfactory and had been achieved without any spraying or other treatment, apart from the precautions in sowing the seed already stated. The number of plants finally used

was 4160; these were planted in 104 plots, each plot containing 40 plants arranged in two rows with 20 plants in each row. The plants were 1 foot apart, the rows 15 inches apart, with 3-foot paths between plots, the whole trial covering about a quarter of an acre. This ground had not been used for flowers within living memory, and had been an apple orchard for at least thirty years up to the spring of 1935. The only treatment it received was a good dressing of spent hops, which was dug in during the late spring of 1935.

Planting out was done on May 28; some rain fell the same day and almost daily for three weeks, as a result of which the plants soon became established and grew well. During the first month of growth in the field, the plants not only thrived but remained entirely free from rust. This was a further proof that they had been kept free from infection, and the appearance of rust was awaited with interest. Judging from the 1934 season, rust could be expected in June, but this did not occur in 1935. At the end of June the plants had made good growth, but repeated inspections failed to reveal a single plant showing symptoms of rust infection. Although disappointing, this fact was not surprising, for there was no news of the disease in the neighbourhood, probably because almost all the *Antirrhinums* had been destroyed in the previous autumn as had been requested. Few inquiries concerning rusted plants had been received. It was decided to commence spraying on July 1 as a preventive measure, and to apply the various treatments each fortnight.

There were now 104 plots of plants ready to be used in testing the efficiency of the selected sprays and dusts against *Antirrhinum* rust.

#### METHOD OF SPRAYING THE TRIAL PLOTS.

For spraying purposes the 104 plots were divided into eight sections of thirteen plots each. The plots in each section were treated in a similar fashion, *i.e.* with the selected nine sprays and three dusts, leaving one plot untreated as a control, but with each section the *number* of applications varied. The method used was to treat all the eight sections at the first application, after which the thirteen plots in the first section were not further treated. The seven remaining sections received the second application, after which No. 2 section (Plots 14 to 26) was not sprayed again, and so on. In this way the first thirteen plots received their different treatments only once. Plots 14 to 26 (second section) were treated twice, and the number of applications increased with each section up to Plots 92 to 104 (eighth section), which received eight applications of the sprays and dusts during the season. By this plan of eliminating a section from the spraying programme every fortnight it was hoped to find the amount of rust control achieved in treating plots from one up to eight times with the various fungicides used. As already mentioned, the treatments were given fortnightly, the sprays being applied every other Monday during the forenoon, and the dusts early

# ROYAL HORTICULTURAL SOCIETY

ESTABLISHED 1804.

INCORPORATED 1809

NOTICE IS HEREBY GIVEN that the ONE HUNDRED AND THIRTY-SECOND ANNUAL MEETING of the Fellows of the Society will be held in the LECTURE ROOM, NEW HALL, GREYCOAT STREET, WESTMINSTER, on Tuesday, February 25, 1936, at 3 P.M. precisely, for the purpose of receiving the Report of the Council for the past year, and electing a President, Vice-Presidents, Treasurer, Three Members of Council, and Auditor for the ensuing year.

By Order of the Council,  
F. R. DURHAM,  
*Secretary.*

ROYAL HORTICULTURAL HALL,  
VINCENT SQUARE, WESTMINSTER, S.W. 1.  
*January 30, 1936.*

## ANNUAL MEETING

To be held at 3 P.M., February 25, 1936

### AGENDA

Minutes of the last Annual Meeting, held February 19, 1935.  
Report of the Council.  
President's Address.  
Treasurer's Statement.  
Election of President.  
Election of Vice-Presidents.  
Election of three Members of Council.  
Election of Treasurer.  
Election of Auditor.  
Presentation of the Victoria Medals of Honour.  
Presentation of the Associateships of Honour.  
Presentation of the Lawrence Medal.  
Presentation of the Holford Medal.  
Presentation of the Veitch Memorial Medals.  
Presentation of the Sander Medal.  
Presentation of the George Moore Medal.  
Presentation of the Williams Memorial Medals.  
Presentation of the Reginald Cory Cup.  
Presentation of the Loder Rhododendron Cup.

## LIST OF NOMINATIONS

The following list of President, Vice-Presidents, Members of the Council and Officers for election is circulated in accordance with By-law 58 :

	<i>Proposed by</i>	<i>Seconded by</i>
<i>As President :</i>		
LORD ABERCONWAY, C.B.E., V.M.H. . . . .	Mr. E. A. Bowles.	Mr. C. T. Musgrave.
<i>As Vice-Presidents :</i>		
THE DUKE OF BEDFORD, K.G., K.B.E., F.R.S.	} Lord Aberconway.	} Mr. R. D. Trotter.
THE DUKE OF PORTLAND, K.G., G.C.V.O., P.C.		
THE VISCOUNT ULLSWATER, G.C.B.		
LORD WAKEHURST, F.L.S.		
THE RT. HON. SIR HERBERT MAXWELL, Bt., K.T., P.C., D.C.L., LL.D., F.R.S., V.M.H.		
Sir DANIEL HALL, K.C.B., F.R.S., D.Sc., LL.D., V.M.H.		
Lieut.-Colonel SIR DAVID PRAIN, C.M.G., C.I.E., LL.D., F.R.S., F.L.S., V.M.H.		
Mr. E. A. BOWLES, M.A., F.L.S., F.R.E.S., V.M.H.		
Mr. C. T. MUSGRAVE, V.M.H.		
Mr. C. G. A. NIX, V.M.H.		
Mr. J. C. WILLIAMS		
<i>As Three Members of Council :</i>		
SIR DANIEL HALL, K.C.B., F.R.S., D.Sc., LL.D., V.M.H.	Mr. J. B. Stevenson.	Mr. J. M. Bridgeford.
Lieut.-Colonel L. C. R. MESSEL, O.B.E. . . . .	Major F. C. Stern.	Mr. G. W. Leak.
Mr. GEORGE MONRO, C.B.E., V.M.H. . . . .	General Sir John Du Cane.	The Hon. David Bowes-Lyon.
<i>As Treasurer :</i>		
Mr. R. D. TROTTER . . . .	Mr. C. T. Musgrave.	Mr. L. Noël Sutton.
<i>As Auditor :</i>		
Mr. J. S. FEATHER, F.C.A. . .	Mr. W. R. Oldham.	Mr. T. Hay.

By Order of the Council,  
F. R. DURHAM,  
Secretary.

January 1, 1936.

the following morning, when dew could normally be expected to have moistened the foliage. During the experiment the weather conditions were most favourable, and all the sprayings were carried out without delay on the prescribed dates. Also when dusting was prevented by wind this was accompanied by rain, so that later in the morning, when the weather improved, it was possible to apply the dusts to foliage still moist.

#### PARTICULARS OF SPRAYS AND DUSTS USED.

The sprays and dusts used were :

- SPRAYS : 1. Bordeaux mixture 4 : 6 : 50 (4 lb. copper sulphate, 6 lb. hydrated lime,\* 50 gallons water).  
 2. Burgundy mixture 4 : 5 : 50 (4 lb. copper sulphate, 5 lb. washing soda, 50 gallons water).  
 3. Lime-sulphur (1 part in 60 parts water ; later changed to 1 in 80).  
 4. Sulphur resin spray A (special formula).  
 5. Sulphur resin spray B (special formula).  
 6. Liver of sulphur (1 oz. to 3 gallons water).  
 7. British colloidal sulphur and white oil spray (6 oz. to 5 gallons water).  
 8. American colloidal sulphur spray (3 lb. to 100 gallons water).  
 9. Washing soda (2 oz. to 1 gallon water).
- DUSTS : 10. Bordeaux dust made in the Laboratory by filtering Bordeaux mixture, drying the precipitate and mixing this with slaked lime dust in the proportion of 1 part of the former to 15 parts of the latter. Both were passed through a sieve of 100 meshes to the linear inch before mixing.  
 11. Green sulphur dust.  
 12. Green sulphur + copper dust.

The sprays were applied with a Four Oaks Pneumatic Knapsack Kent Pattern No. 4 sprayer with a fine nozzle, and the dusts with a Waldron type large hand powder duster. Saponin was used at the rate of 2 oz. to 100 gallons of spray, and included in all sprays except four. The exceptions were : sulphur resin sprays A and B, the American colloidal sulphur spray, and the British colloidal sulphur *plus* white oil spray, this last having a special spreader provided, while the other three were stated not to need a spreading agent. Spraying and dusting were both done thoroughly, and without doubt the plants received a better covering than they would receive in any ordinary routine field spraying.

#### 1ST SPRAYING, DONE ON JULY 1/2.

Although no rust symptoms had yet been seen, the first application of the different sprays and dusts was carried out on all sections on July 1/2, the weather being dull and cool, with very little sun all day, after which rain fell during the night. Observations following the treatments showed the usual bluish-white coloration on the Bordeaux-sprayed plots and some spray damage on the lime-sulphur-sprayed ones, but no criticism could be made of the other plots.

\* Where quicklime is difficult to obtain, hydrated lime is recommended and in this experiment has proved most satisfactory.

### *Particulars of Infection of the Plots.*

About one week after the first spraying, several plants on Plot 17 began to show symptoms of rust, but in no other plot could the disease be found. This natural infection had always been a possibility, but it had been hoped that the appearance of the disease in local gardens would have provided a longer period of warning, for (i) the trial ground was fresh to flowers, (ii) as far as was known no *Antirrhinum*s were growing near, and (iii) the Gardens themselves are fairly isolated. As disease had now intruded, it was decided to attempt as far as was possible a uniform infection of the plots and thus obtain a fair comparison of the efficiency of the sprays in controlling the disease. The uniform infection was carried out in the following manner. Surrounding districts were searched for plants bearing rust pustules and the necessary material was collected. On the evening of July 11 a heavy suspension of uredospores in water was made, and with this suspension each of the 4160 plants in the trial was hand infected. This was done by dipping the fingers into a jar containing the spore suspension and gently touching a leaf on the south-west side of each plant with the wetted fingers. Each plant thus had one leaf (always on its south-west side) slightly wetted with spores. Tests on microscopic slides in the Laboratory showed that a fair number of spores were deposited at a touch, and also that the spores were viable, for good germination was obtained in distilled water in less than two hours. The infection of the plants was done between 6 and 9 P.M., and as the weather was dull and warm, and rain fell during the night, conditions were almost ideal for the purpose. When the work was completed the drops of water could still be seen on the under surface of the first leaf treated. It was felt that chances of infection occurring uniformly were good.

Infection by *Antirrhinum* rust occurs by means of spores from the pustules being carried from the infected to healthy leaves. An infected leaf is ultimately killed, when it turns brown and shrivels up, but there is no evidence that the fungus can pass from leaf to leaf by growing *inside* the tissues of the plant. As each leaf requires to be infected by fresh spores, the infection of one leaf does not necessarily seal the fate of the plant, and covering the other leaves with a protective film of a thoroughly efficient fungicide should prevent further infection. In spraying tests it is desirable to have the disease distributed in as uniform a manner as possible, and it was thought that this could be achieved most suitably by the method already described.

### 2ND SPRAYING, JULY 15/16.

The natural infection by rust of Plot 17 was now scattered through Plots 17 to 21, but spreading very slowly. As these plots were in Section 2, they, of course, received this second treatment. After this treatment the coloration caused by Bordeaux mixture was fairly

pronounced. The Burgundy-sprayed plots had a very slight bluish tinge which could just be seen from a near view, but this spray must be applied very heavily to be at all unsightly. With lime-sulphur spray damage again appeared: the foliage was scorched not only on the sunny side of the plant but also on the shady side, and damage to the flowers also occurred. An interesting feature was that certain individual plants (same variety) did not suffer this spray damage at all—a fact commonly noticed in spraying experiments. In view of this damage it was decided to mix the lime-sulphur for future use at the weaker strength of 1 part in 80 parts water. The other sprays did no damage and, although some left a deposit of spray on the leaves, none could be said to cause a definite coloration. Of the dusts only Bordeaux dust showed an unsightly white appearance, obviously due to the dilution with lime in its preparation.

### 3RD SPRAYING, JULY 29/30.

The weather had been fine since the second spraying two weeks before, and the plants were in full flower. Although pustules were now plentiful on the foliage, the spread was very slow and the disease could not be considered obvious, but all plots were infected, no doubt owing to the artificial infection, already described, beginning to take effect. Bordeaux mixture coloured the plants as usual, and Burgundy mixture gave a slight blue tinge (hardly noticeable), but lime-sulphur (now 1 in 80), applied for the third time, began to give a white appearance to the plants; this, however, has not a lasting effect, and is soon reduced by rain. Of all the other treatments only Bordeaux dust makes the plants unsightly.

### *Flower Damage.*

Observations taken twenty-four hours after this third application revealed that lime-sulphur 1 in 80 did not harm the foliage, but certainly damaged the flowers. Slight damage to the flowers was also noticed with both sulphur resin sprays and the American and English colloidal sulphur sprays. No flower damage occurred with Bordeaux mixture, Burgundy mixture, liver of sulphur, washing soda, or any of the dusts. In connexion with this flower damage it must be said that the fortnight following the spraying had been one of very bright sunshine.

### 4TH SPRAYING, AUGUST 12/13.

As no rain had yet fallen, the flower spikes bearing seed pods were removed from the plants on August 8, not only to help the plants in the drought, but also because the heavy seeding was likely to cause them to topple. At this fourth application the sprays dried quickly because, although the weather was cloudy and dull, it was also very warm. A little rain fell during the night. At this time the disease

was still showing no signs of becoming epidemic, nor was it yet killing the foliage. However, from the fact that only three plants out of the 4160 were free from rust symptoms, it was evident that the uniform infection method had been successful.

### *Biological Note.*

In connexion with the slow spread of the disease in the early stages of the experiment, it is interesting to note that the spore pustules were continually being eaten completely away by some insect. This has been noted by other investigators, but in the case of *Antirrhinum* rust pustules the cause had not yet been ascribed to any definite insect. At Wisley careful observation showed there was no doubt that the major part of the damage to the rust was done by the larvæ of a fungus-feeding species of gall midge (*Cecidomyiidae*), namely *Mycodiplosis* spp. This insect was handed to the Entomologist, Mr. G. Fox WILSON, who, after rearing the adult, submitted the material to Dr. H. F. BARNES of Rothamsted, to whom we are indebted for the determination of the genus.

### *Covering Effect of the Sprays and Dusts.*

Bordeaux mixture gave a good cover, as did also Burgundy mixture, lime-sulphur, sulphur resin A and B, and liver of sulphur. Sulphur sprays and washing soda did not appear to be quite as good in forming a covering film. The green sulphur *plus* copper, and green sulphur dusts, were easy to apply and deposited a fine coating, but the home-made Bordeaux dust was too coarse and the cloud effect from the powder duster was somewhat spasmodic, resulting in an unsightly white appearance.

### 5TH SPRAYING, AUGUST 26/27.

No appreciable rain had fallen for seven weeks preceding August 22 and the fungus seemed to be unable to make headway. Although the disease was abundant the plants were still green and, to a casual observer, looked fairly normal. It was thus impossible to deduce whether any advantage had as yet been gained from any of the treatments. Wet weather had set in during the week, but the spraying was carried out without any interference from rain.

### 6TH SPRAYING, SEPTEMBER 9/10.

At the time of this treatment a noticeable increase in infection had occurred, and in the two weeks since the last spraying the disease had increased with astonishing rapidity. The majority of the plants were obviously suffering from rust infection. The weather during the spraying was warm and humid, and although dark mornings made it necessary to postpone dusting until 7 o'clock the heavy dews at this time of year provided ideal conditions for the work.



## 7TH SPRAYING, SEPTEMBER 23/24.

The weather was fine and warm (a wet morning caused dusting to be postponed until 9 A.M.). The disease was by now well marked and the trial area contained a very large percentage of brown rusted plants, of which a great number were dead. The effect of the sprays even to the inexperienced eye was clearly marked, and plots sprayed with the copper-containing sprays (Bordeaux and Burgundy mixtures) were easily identified as being superior to the other plots.

## 8TH (FINAL) SPRAYING, OCTOBER 7/8.

One section only (Plots 92 to 104) remained to be treated, and, although it was felt results already obtained were conclusive, this last treatment was carried out.

## COLLECTION OF DATA.

At the end of the test the trial presented a most interesting aspect. Large areas of dead or dying plants contained in places a plot of green plants in flower for the second time. The plots in flower were in every instance those which had been sprayed with the copper-containing sprays. In the first two sections containing Plots 1 to 26, the plants in all the plots had been dead for some time. In the three-times-sprayed plots (third section) a slight controlling effect could be noticed, Burgundy mixture being best, but, although slight differences were just discernible between the other plots, no other spray appeared worthy of consideration. In the fourth section (four times sprayed) the Bordeaux plot was flowering almost as well as the Burgundy plot, but the latter was definitely the better. Section 5 had suffered early infection from the inroads of the parasite, which had driven a wedge-shaped area of very heavy infection from Plots 17 to 21, with the result that all plots in Section 5 suffered heavily and control of the disease was not so effective. Nevertheless the Burgundy-sprayed plot, even in this section, resisted the disease to a marked extent.

Sections 6, 7 and 8 gave abundant evidence of the superiority of the copper-sprayed plots, which were well covered with flowers for the second time and stood out in marked contrast to the browned and dead-looking plants composing the majority of the other plots. From the three-times-sprayed section onwards the size, green colour, and flower production of the plants in the copper-sprayed plots were outstanding features at the end of the trial. This is borne out by the figures in Table I, where it is seen that out of 258 plants considered as those still remaining good in the trial, no fewer than 240—that is, 93 per cent.—were to be found in the Bordeaux- and Burgundy-sprayed plots.

The plants shown in Table I were those that would receive six or more marks in compiling the census recorded in Table II (p. 73). It will be

seen that, apart from the Bordeaux and Burgundy plots, all the other plots together only contained 18 good plants out of 3520—*i.e.* 0.5 per cent.; whereas the Bordeaux and Burgundy plots contained 240 good

TABLE I.

*Showing the position of those plants in the trial still good on October 10.*

Spray or Dust used.	Number of Good Plants per Plot of 40.								Totals.
	Number of Times sprayed.								
	1	2	3	4	5	6	7	8	
Bordeaux mixture .	—	—	3	I	2	3I	35	3I	103
Burgundy mixture .	—	—	9	II	7	35	39	36	137
Lime-sulphur .	—	—	—	—	—	3	—	—	3
Sulphur resin A .	—	—	—	—	—	—	—	—	—
Sulphur resin B .	—	—	—	—	—	I	—	—	I
Liver of sulphur .	—	—	—	—	—	I	—	—	I
British colloidal sulphur .	—	—	2	—	—	5	—	—	7
American colloidal sulphur .	—	—	2	—	—	—	—	—	2
Washing soda .	—	—	—	—	—	—	—	—	—
Green sulphur dust .	—	—	—	—	I	—	—	—	I
Green sulphur + copper dust .	—	—	—	—	—	—	—	2	2
Bordeaux dust .	—	—	I	—	—	—	—	—	I
Control .	—	—	—	—	—	—	—	—	—

plants out of 640—*i.e.* 37 per cent. Taking together the plots treated six, seven and eight times with Bordeaux and Burgundy mixtures, it will be seen that good plants in the Bordeaux-sprayed plots numbered 97 out of 120, and in the Burgundy-sprayed ones 110 out of 120—*i.e.* 80 per cent. and 91 per cent. respectively.

The superiority of the copper-containing sprays is seen by the fact that in the plots treated six, seven and eight times with other fungicides the highest number of good plants for any treatment was 5 out of 120—*i.e.* 4 per cent.

After the final spraying on October 8, other data were collected. A census of the plots was taken and each plant was awarded marks according to its condition, as follows :

Condition of Plant.	Marks awarded.
All leaves dead, skeleton appearance . . . . .	0
Most leaves dead, brown and unsightly . . . . .	2
Some leaves dead, poor-looking plant . . . . .	4
No leaves dead, but foliage showing yellow infection patches .	6
Healthy-looking; leaves large and dark green, bushy plant and flowering, although many rust pustules present . . .	8
Healthy plant free from rust * . . . . .	10

No plant in the trial could fulfil this requirement.

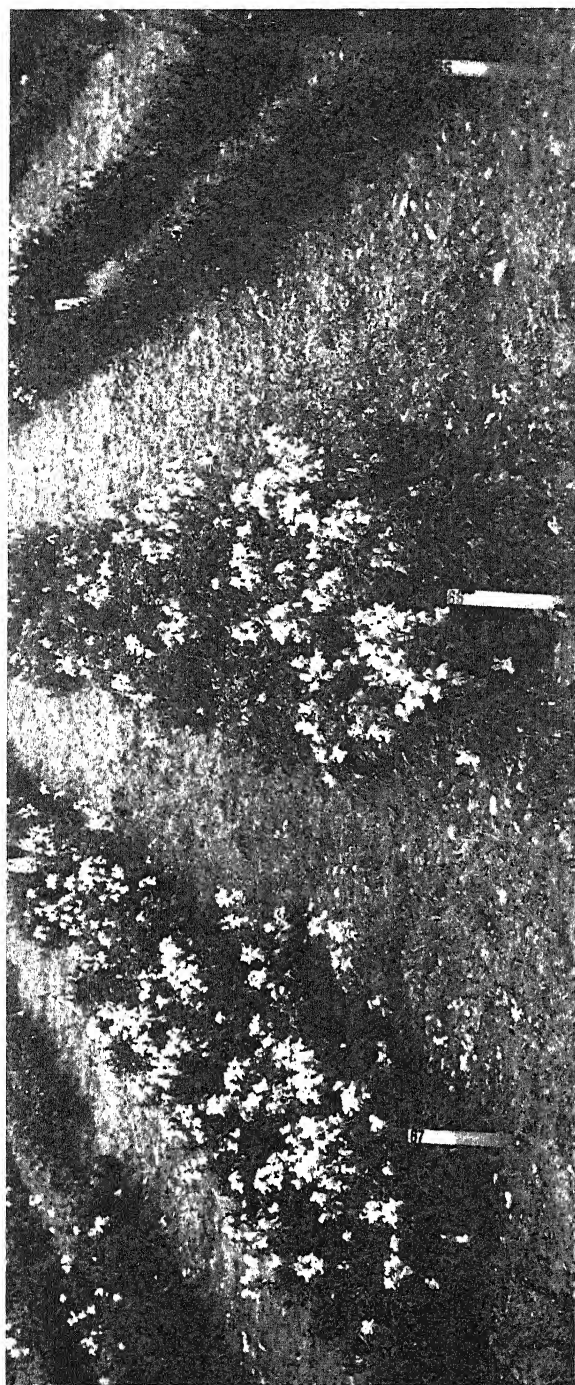


FIG. 6.—ANTIRRHINUMS SPRAYED SIX TIMES AGAINST RUST, WITH UNSPRAYED ROW (65) ON RIGHT.

Row 67 (left) sprayed with Burgundy mixture, Row 66 with Bordeaux mixture.

[To face p. 72.



FIG. 7.—*ANTIRRHINUMS* SPRAYED EIGHT TIMES AGAINST RUST, WITH UNSPRAYED ROW (78) ON RIGHT.  
Row 80 (left) sprayed with Burgundy mixture, Row 79 with Bordeaux mixture.

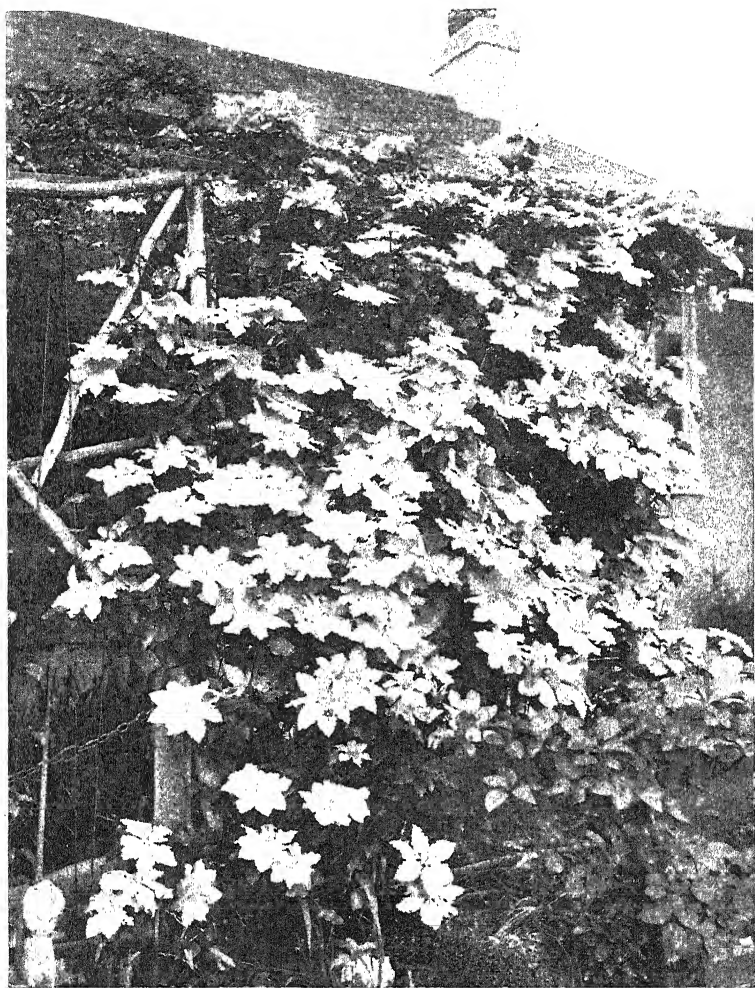


FIG. 8.--CLEMATIS LASURSTERN.  
Flowers purplish-blue.

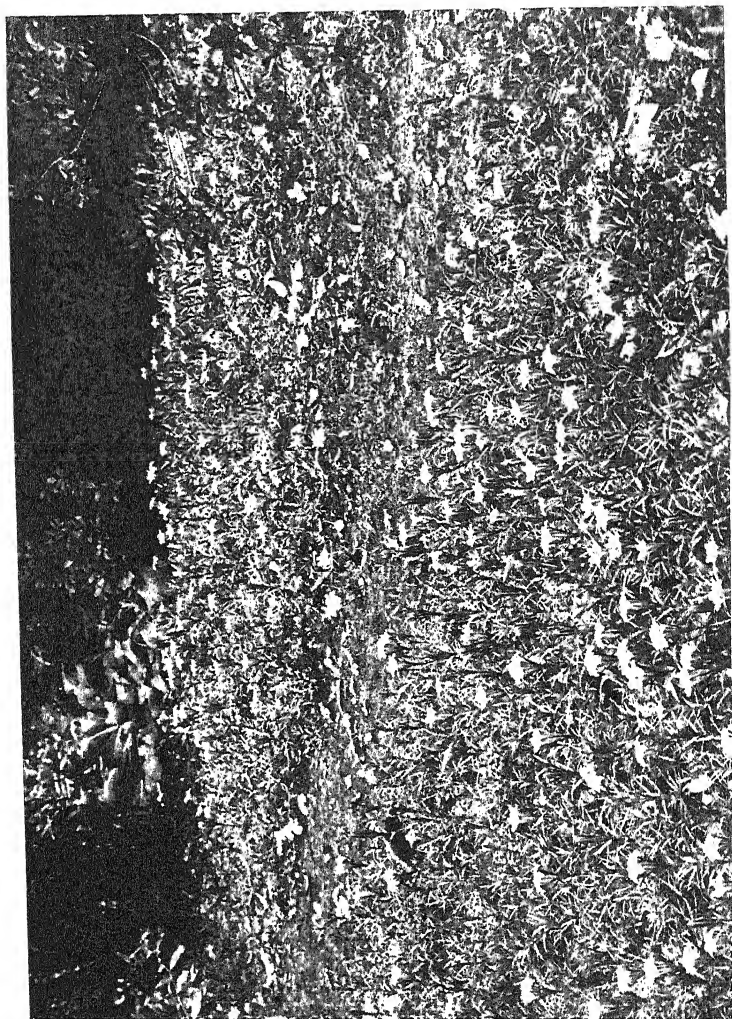


FIG. 9.—GENTIANA SINO-ORNATA IN WILD GARDEN AT WISLEY.

[To face p. 73.]

This system of awarding marks provided the figures given in Table II.

TABLE II.

*Marks awarded on the condition of the plants in the different plots on October 10.*

Spray or Dust used.	Marks per Plot (possible 320).								Total for Eight Plots.	Average Marks per Plot.
	Number of Times sprayed.									
	1	2	3	4	5	6	7	8		
Bordeaux mixture .	22	4	70	92	36	232	232	218	906	112
Burgundy mixture .	20	4	138	162	146	254	252	252	1228	153
Lime-sulphur .	8	—	54	2	42	50	50	34	240	30
Sulphur resin A .	2	—	32	8	26	54	26	28	176	22
Sulphur resin B .	6	—	42	10	26	98	14	26	222	28
Liver of sulphur .	4	—	22	—	—	16	10	2	54	7
British colloidal sulphur	2	—	66	2	34	98	8	30	240	30
American colloidal sulphur . .	—	—	28	4	6	36	2	10	86	11
Washing soda . .	—	2	4	—	10	4	—	38	58	7
Green sulphur dust . .	—	2	60	6	62	46	8	40	224	28
Green sulphur + copper dust . .	—	2	36	2	32	48	26	98	244	30
Bordeaux dust (home-made) . . .	4	2	34	—	8	24	—	2	74	9
Control (no treatment)	4	—	16	—	4	6	—	4	34	4

## DISCUSSION.

The results shown in Table II confirm the impression given by visual observation that the plants in the Burgundy- and Bordeaux-sprayed plots were well ahead of all others. Figs. 6 and 7 show photographs of plots treated at fortnightly intervals six and also eight times with these sprays: in each the control plots on the right and the lime-sulphur (six and eight times sprayed) plots on the left with their almost dead plants providing a marked contrast.

It will be noticed from Table II that, despite variations among the other plots, no other spray in this experiment approached the copper-containing sprays for efficiency in combating the effects of rust disease.

Among the copper-sprayed plots those treated with Burgundy mixture appeared from visual observation to be definitely better than the Bordeaux-sprayed plots, where these sprays had been applied three, four and five times. In the plots treated six, seven and eight times there seemed little to choose between Bordeaux mixture and Burgundy mixture, but the figures in Table II reveal that the plants in the Burgundy-sprayed plots were always superior to those treated the same number of times with Bordeaux mixture. Burgundy also has an advantage over Bordeaux mixture in that it does not discolour the foliage.

states: "Under the high winter temperatures prevailing in Bermuda (60° to 75° F. in the shade) sulphur dusting was of little value as a control measure even when carried out consistently, hence little can be hoped for in this direction in the cooler temperatures of England."

On the other hand, the copper-containing sprays provided a fair degree of control, even under the conditions of very heavy infection provided by the neighbouring badly diseased plots in the trial. It cannot be claimed that Bordeaux and Burgundy mixtures exercised complete control of the disease, but repeated applications prevented it sufficiently to ensure that the plants so treated remained vigorous in appearance and flowered well for the second time. It is also clear that, under ordinary outdoor conditions of temperature and climate in Great Britain, these copper-containing fungicides have proved superior to those containing sulphur in the control of *Antirrhinum* rust.

It must not be forgotten that this season the disease was very slow in developing, and in all probability in most seasons it would be necessary to commence spraying earlier. The control achieved cannot be said to be completely satisfactory, and the number of spray applications required (*i.e.* six) must be considered the minimum. For this reason many will doubt the possibility of successfully combating this disease by means of spray control.

There is, however, in progress at Wisley another line of investigation depending on the selection of plants resistant to the disease. Some 550 plants of a resistant stock were this year planted along the north side of the spraying experiment trial plots. Despite the fact that these plants were sprayed three times with a heavy suspension of uredospores and were exposed for over four months to very heavy natural infection, some 77 per cent. remain entirely free from rust symptoms. Some of these have been selected for further investigation.

The author's thanks are due to Miss D. ASHWORTH for assistance throughout the investigation, to many members of the Wisley Laboratory and Garden Staff, and to Mr. N. K. GOULD for taking the photographs.



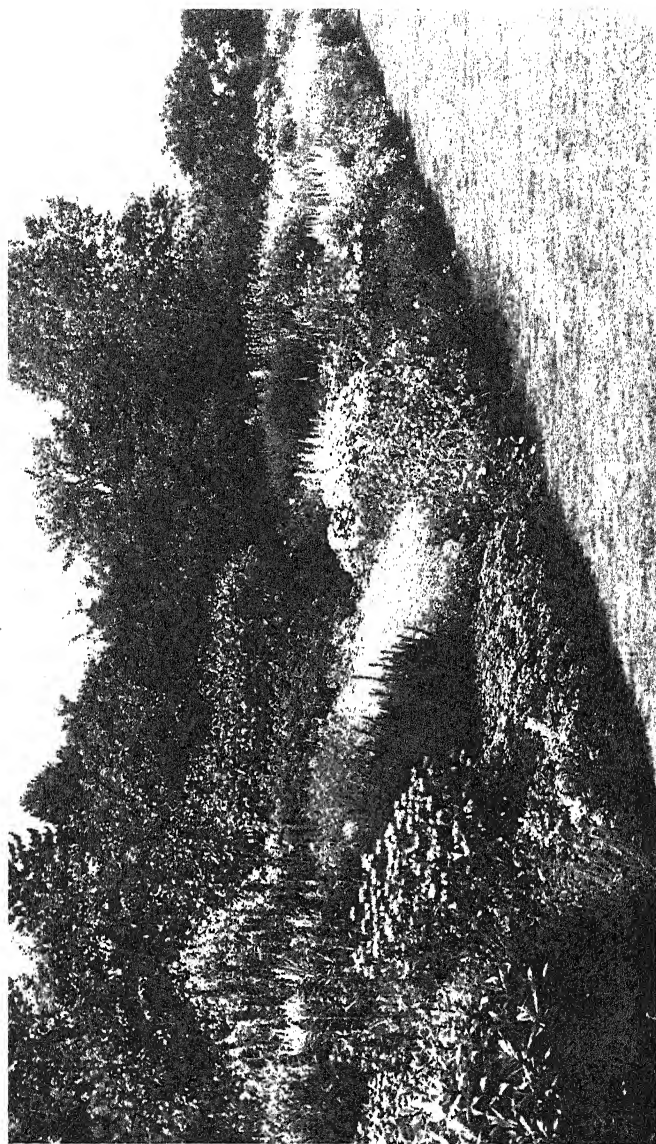


FIG. 10.—THE HERBACEOUS BORDER AT WISLEY, 1935.

[To face p. 76.]

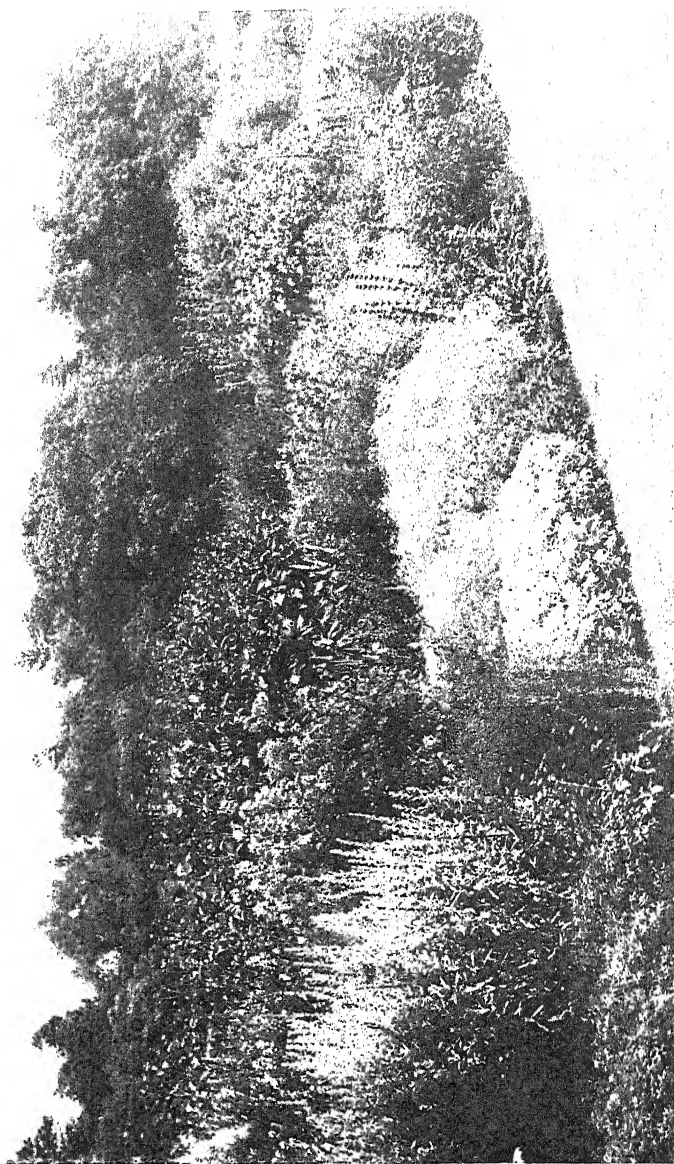


FIG. 11.—THE HERBACEOUS BORDER AT WISLEY, 1935.

## MASTERS LECTURES, 1935.

## PROBLEMS IN CLASSIFICATION OF PLANTS—I.

By Prof. Sir WILLIAM WRIGHT SMITH, M.A., F.L.S., V.M.H.

[Read November 5, 1935; Sir A. W. HILL, M.A., F.R.S., in the Chair.]

IN choosing the above title for the Masters Lectures, I had not in view a subject on which there is likely to be unanimity. In matters taxonomical—in the classification of plants—there is much divergence of opinion. There is still a great lack of precision in our knowledge of this field of enquiry and there are many reasons for disharmony. It is a very wide field with many points of interest and I must deal necessarily with general problems. Even if we restrict the discussion to the Flowering Plants, much can be debated as to the grouping of them into families; there is the problem of the arrangement of genera within a family; there is the vexed question of the nature of species and their delimitation, and the very debatable ground of plant-names and rules of nomenclature. Obviously it is not possible to discuss all these in detail, and I must try to fix on certain aspects which may prove of interest.

Let us approach the problem first from the point of view of the horticulturist. His main aim is to have definite and correct names for the plants he has in cultivation. Failing a decision from the literature at his disposal—and he finds that there the authorities are oftentimes at variance—his usual custom is to send a specimen to one of the chief herbaria for identification. If he sends it to several such centres he sometimes finds that the results are not in unison—which he may interpret as reflecting on the accuracy and knowledge of those who ought to know. But a problem which elicits such varied interpretations must be very far from being an easy one and in my address I shall endeavour to show what difficulties arise and why the work of identification is in many cases so much more intricate than would appear at first sight. How far are these difficulties due to human error—and how far are they due to the complexity of the material to be investigated? Progress in scientific knowledge and in scientific method should have tended to a solution of such problems, but in many instances that progress—as in other sciences—seems but to have added to the number of the problems and to their complexity. The boundaries have been extended, but still Alps beyond Alps arise. In many fields of human enquiry, latitude of opinion is the rule. If we were discussing politics, religion, or morals it would be vain to expect any measure of agreement even in these days of standardization and mass-suggestion. But surely, it may be urged.

with such definite things as plants there should be little room for doubt and still less for dispute.

For a proper appreciation of the problems involved, it will be necessary to take a review of the beginnings of classification and of nomenclature and to trace in outline their development. A science cannot be born again. We must build on what has been done in the past. Progress comes not only from the discovery of something new but also from the elimination of previous error. Nor can we flatter ourselves that in any science have all errors been removed—or that new errors are not being introduced. The history of plant-names may well go back as far as human language. Man must have a name for what he meets with—otherwise he does not know it. But I cannot do more than glance at this part of the long history. The world and its peoples in the past could not be expected to be either accurate or uniform in their names for plants—nor have we yet attained to that ideal. The first names would in a measure correspond to the popular names still current in every country at the present day. They would necessarily vary as they now do from country to country and even from district to district. Here would begin nomenclature but scarcely as yet classification. No doubt certain comparisons would be made between plant and plant, and a rudimentary classification would ensue such as is shown among our popular names—the Nettle associated with the Dead-Nettle, and the Greater Celandine with the Lesser.

The basis of our botanical terminology is to be found in the writings of Greek and Latin authors such as THEOPHRASTUS, DIOSCORIDES and PLINY. There the plant-names were accompanied by very imperfect descriptions, which in many cases are far too inadequate to permit of the definite identification of the plants referred to. Nor was there any hint of a classification resting on a truly scientific basis—nor was such to be expected at that time. Practically little advance was made during the classical period in the recognition of plant-affinities and naturally nothing taxonomic was possible. This is not to say that in the ancient writings there is no evidence whatever of appreciation of certain groupings in the Plant Kingdom. The far-seeing Greeks did not fail in that respect. THEOPHRASTUS, for example, can be credited with a clear conception of the family which we now call Compositae. But in general the treatises of the time were rather philosophical dissertations than a record of plant-life based on detailed observation. There succeeded the many centuries known as the Dark Ages, when intellectual life and scientific progress were at a very low ebb. One of the chief impedimenta to advance was the deference paid to the writings of ARISTOTLE, THEOPHRASTUS, and other writers of the classical epoch. Deviation from their views was not far short of sacrilege and brought the innovators very near to the appropriate penalties. And so nothing to our purpose is to be found till we come to the middle of the sixteenth century. Better fifty years of progress than a cycle of Cathay. But there is really no need to go to China for the comparison—Europe can supply it. The new development took the form of the production of

herbals, chiefly in response to the need of the physicians desirous of using in their practice plants and plant-products available in their own country or district. But recognition of the plants themselves and authority for their use were still based in great measure on the classical writings of nearly 2000 years before. And thus arose a grave error which appears particularly strange to us in our day. The compilers of the earlier herbals endeavoured to find in their own province the plants recorded by the Greek authors and physicians, and the results were naturally misleading. That the floras of various countries differ very widely was not then realized. But, in spite of this false step, a manifold advance was now made. Study was directed to the native plants; recognizable descriptions of these were published; more or less adequate illustrations became available; first hundreds and then thousands of species were recorded. Further evidence of the new departure in this century is found in the establishment of botanic gardens and the beginnings of the first herbaria. To some degree the classical spell began to be broken. Something was added to the botanical knowledge of the floras of countries other than the writer's own; travellers brought back plants quite unknown to their native land; some of these were established in the new botanic gardens; a great impetus was given to the formal description of individual plants—a task deemed for a long time to be the chief duty of the botanist. But the chief gain from the new stimulus was the beginning of an appreciation of the affinities of plants. This was naturally very far from any degree of precision, for but little was as yet known either of flower-structure or of the uses of the floral parts. Yet perception of natural affinities now went somewhat beyond the facile comparisons which are recorded in the popular names of plants of which numerous examples persist at the present day. From this period we may date the beginning of classification; what we now call genera and species were presenting themselves, if in a vague way, to the perception of the botanist. Even a few of the larger groups took shape, such as *Coniferae* and *Umbelliferae*. In the circumstances mistakes were numerous; the same plant received several names and so synonyms abounded—no reproach, for even in these enlightened days they increase and multiply. But some degree of order was arising out of chaos and even hints of that binary nomenclature which was established much later by LINNAEUS.

In the next century the first outstanding name for our purpose is CESALPINO. He may be regarded as the first systematist. His arrangement of the Vegetable Kingdom comprised fifteen classes with diagnostic characters for each. His contemporaries continued their task of describing plant after plant, but CESALPINO endeavoured to find fundamental principles. Although little was known of the function of the flower and although sexuality in plants was denied by CESALPINO, he founded his arrangement on the organs of fructification, relegating habit to a negligible position. In this we may note another step in advance. To our eyes his system appears far removed from

any expression of affinities. Necessarily it was of a very artificial nature and his groups now appear very unnatural. He intended to base his system on approved affinities. But as was the case in other sciences, the path chosen was to take *a priori* principles—predetermined marks—which were to guide and control all subsequent exploration of facts. We have here the old contrast between deductive and inductive reasoning. The stultifying influence of dogma with its long reign of many centuries was hard to counteract. Hydra-headed, it was not easy to kill. Nor can we deny its power in our own day. And here I must quote a pregnant sentence from SACHS, the historian of Botany, to serve as one text in this discussion. “It is characteristic of the natural system to reveal itself to a certain extent more readily to instinctive perception than to the critical understanding.”\* The botanist who is a true systematist will, I think, readily agree to that statement, for he must be able to recall instances where his path was thus made clear and where the established criteria had to become entirely secondary. It is incumbent on every systematist seeking to unravel the tangled skein of plant affinity and of plant classification to challenge the validity of many of his rules and many of his criteria in the expectation that he may come nearer to the ideal of a truly natural arrangement.

The closing years of the seventeenth century added much to the record of described plants, but the mass of the material of that nature, now accumulated and regarded as the essential pabulum of every botanist, tended to obscure the major problems of classification. The wood could not be seen for the trees. But JUNG did much to forward a system of morphology which LINNAEUS was to use later; MORISON, the Aberdonian, produced the first monograph of a family—the Umbelliferae (1672); JOHN RAY (1628–1705) formulated a system of thirty-three classes, held that a difference of sex is to be found in the Plant Kingdom, distinguished between Flowering Plants and Cryptogams, divided Flowering Plants into what we now call Dicotyledons and Monocotyledons, and is accounted by the historian to have done among pre-Linnaean botanists most justice to natural affinities; germane to our subject is his saying that Nature refuses to be forced into the fetters of a precise system. There was BACHMANN (RIVINUS, 1652–1725) who pointed out (without adopting it) that the best way to name a plant was one word for the genus and a second name for the species—a method to be firmly established later by LINNAEUS. Then came TOURNEFORT (1656–1708) who supplied many genera with names *and characters* and produced a systematic arrangement which was dominant until well within the time of LINNAEUS. The new system based chiefly on the flower was still highly artificial; TOURNEFORT did not admit sexuality in the Plant Kingdom (already made known by CAMERARIUS); amid much that was excellent in arrangement and in illustration and thus easy to understand, his views on affinities

\* SACHS, Hist. Bot., p. 58.

showed no advance on those of his immediate predecessors, for in that respect he compares unfavourably with RAY. With the exception of RAY, the systematists of the time paid little or no attention to the work of other botanists engaged on microscopical, anatomical and physiological research. And so they have merited the reproach of the historian :—" We have here only the first example of the fact since so often confirmed, that professed systematists shrank with a certain timidity from the results of more delicate morphological research, and rested their classifications as far as possible on obvious external features in plants—a proceeding which more than anything else delayed the construction of the natural system." \* At the present time, with the increasing scope of our science and with its ramifications into genetics and cytology, it is incumbent on the systematist to make certain in what respects this new knowledge is of concern to his special domain and to try to determine to what extent classification, its principles and its methods, are likely to be affected thereby. There is here a fundamental question to which we must recur at a later stage.

After this preliminary survey, too brief for justice to these earlier workers but no doubt long enough for your hearing, I come to LINNAEUS (1707-1778). Here again I must be too brief for an adequate appreciation. As in all science, LINNAEUS had to build on the work of his predecessors. He had the high gifts of clearness and precision ; brilliant in his powers of description, he had the greatest talent for bringing into an ordered sequence the vast material already assembled by botanists and zoologists ; his methods became the model for subsequent workers. From his wide outlook it was now clear for the first time that there were two principles and two systems on which classification might proceed. One was a frankly artificial system—for practical use—a key for the recognition of species (as well as larger groups) framed without any necessary reference to the affinities of the plants concerned. Such methods we still employ, as may be seen in many floras where ready identification is the aim. Like much that is advertised they supply a felt want ! If well founded they oftentimes offer in these days a speedier route to the desired end. But LINNAEUS saw clearly that, if a system was to be scientifically valuable, it must be based on principles of affinity—that it must conform to a natural grouping. Constantly engaged as he was in descriptive work, he had not the leisure to explore fully the field which opened out before him, yet he was able to indicate sixty-seven truly natural groups as a basis for future systematists. Nor was the time quite ripe, for the systematist who worked on the broader morphological criteria could not have solved the many underlying problems without the aid of the new knowledge coming from microscopical research. LINNAEUS, however, regarded the discovery and formation of a complete natural arrangement as the *chief* task of the systematist, and with this in view, could aver that the mere practice of describing species

\* SACHS, Hist. Bot., p. 77.

might be carried on by those who knew nothing of Systematic Botany ! *Risum teneatis amici?* Such licence may have seemed good in the days of "constancy of species." Our problems in nomenclature would be simpler to-day if the path of the *describer* had been a harder one.

LINNAEUS is rightly represented as the real founder of our present system of nomenclature, with one name for the genus and one for the species. This step alone was of signal service to the science which Botany now became in his hands. Much yet remained to be done, for it was not to be expected that at that period much insight was to be gained into the nature of plants and into the causes of the phenomena of the living organism—research with all its necessary *apparatus* was only in its beginnings. For progress in fundamentals the systematist had in the future to take cognisance of researches which lay, in the opinion of the time, outside his normal sphere.

Now was attained a fixed point for nomenclature and classification. True it was well over a hundred years before that fixed point was agreed upon, but botanists now take LINNAEUS' *Species Plantarum* (1753) and his *Genera Plantarum* (1754) as the dates from which names are judged in questions of priority. But the foundations were laid, and my subsequent outline can be the briefer. So successful was the artificial system of LINNAEUS that again *authority*—the scholastic attitude—raised its head and LINNAEUS became another ARISTOTLE to dominate the views of his successors. There was a tendency to the mechanical ; a certain stability in the outlook was a negation of progress.

The next stimulus came from France, in the main from ANTOINE DE JUSSIEU (1748-1836) and AUGUSTIN DE CANDOLLE. The first saw that in LINNAEUS' tentative exposition of a natural system lay the line of advance. His new system embraced one hundred families, for the most part referable to the same to-day, but very differently grouped and with some strange juxtapositions. Classification had reached firmer ground ; it began with species ; then came recognition of genera ; now larger natural aggregates ; the families took quite definite shape. There followed A. DE CANDOLLE (1778-1841), one of the greatest of botanists and an enormous worker, perfecting the previous systems and bringing in the influence of new ideas. His numerous and extensive monographs touched on nearly all the families he recognized—now 161 in number.

But while the doctrine of constancy of species still held sway, there was no *meaning* in the natural system ; moreover, fundamental discoveries in development and in the nature of the Cryptogams were necessary for progress. That further knowledge came sometimes from the systematist, and one good example was the case of ROBERT BROWN (1773-1858). He founded no new system but made outstanding additions to knowledge of the flower, of the seed, of the structure of the ovule and its contents—and particularly to recognition of the true characters of the Gymnosperms. These investigations—



in due course—had a profound effect on the wider issues of plant classification.

From 1825 onwards for some twenty years appeared many systems—over thirty. There was abundant diversity of opinion. Much improvement was effected in detail but not much advance in fundamentals—in the interpretation of the principles. Even a summary of these systems must be outwith our scope.

Justification for the Natural System and an explanation of its meaning came with DARWIN. If he brought the interpretation, it was the labours of botanists and zoologists in the establishment of the Natural System which gave DARWIN the material and the basis for much of his reasoning. It is not too much to say that without the Natural System the Darwinian exposition would have lost one of its chief supports. Subsequent systems had now a new viewpoint. There was a reason for tracing affinities, and succeeding systematists endeavoured to find the true sequence in the evolution of the families and their subdivisions—with varying success—for the necessary data are still too inadequate and speculation as to affinities still runs too far ahead. But apart from the Darwinian exposition and the end of the doctrine of constancy of species, many other influences were brought to bear on the field of the systematist. One great change resulted from the improvement of the microscope with observation of the details of plant life and structure. This was particularly noticeable in the case of the Cryptogams, previously much misunderstood and almost an unexplored field. The new knowledge there obtained had the unexpected result of raising fundamental questions as to the origin and development of the Flowering Plants. This was achieved by the wonderful researches of HOFMEISTER. To this was added the beginnings of investigation into the record of fossil plants with entirely new data to be taken into account by those endeavouring to read the historical sequence of plant evolution. Add also the new knowledge gained in embryology, in the details of flower structure, in the sexuality of plants, in hybridization, in the minutiae of the structure of the cell and its contents, ending in our own time with the development of cytology and genetics.

Necessarily, therefore, new systems had to be proposed and will continue to be proposed as knowledge advances and as defects appear in the pre-existing ones. It is not germane to my purpose to enumerate these nor is there time to do so. There are two which have had a high degree of acceptance for practical purposes—the system of BENTHAM and HOOKER in the *Genera Plantarum* (1862–1883) and that of ENGLER (1892). Most collections in botanic gardens and in herbaria are still arranged in accord with one or other—with occasional divergences. Not that either system is now recognized as entirely adequate, but there are many reasons why complete rearrangement does not necessarily follow the advent of a new system, whether approved or not. The newer systems as they appear have to win acceptance. The broad outlines are not likely to vary in any marked degree and there is a

natural tendency to leave well alone until there is some reason for fundamental changes.

In so far as the major divisions—the families—are concerned, there is now some degree of stability. Any changes which are likely to occur will be of minor importance as far as can be foreseen. But while relative stability has apparently been secured for the families, that cannot be said of the genera and still less so of the species. All three categories come within the scope of classification and the aim is to produce what can be called a natural arrangement based on approved or at least probable affinities. How far is it possible to go on fairly safe ground and how much must be still left to speculation? There lie some of the problems I propose to touch upon, and I must try to find reasons for the many divergences of opinion which exist. I have said it is a very wide field. It therefore seems to me advisable to limit the discussion and to treat the subject under three heads. First the historical reasons for lack of uniformity, secondly what may be fairly termed the human reasons, and thirdly the natural reasons. These will be treated in that sequence and we shall be able to form a general idea of what has been the influence of each on classification and its problems.

Taking, then, the historical reasons, I have already given an outline of the development of classification. As we saw, it has had a chequered progress. It has been no easy course but one beset with difficulties, confusion and many errors. As in other sciences the present structure has been built on the records of the past. But the sciences which are not biological are fortunate in this respect, that they are free from certain fetters which the systematist must continue to endure. Our classification and nomenclature have been founded on the descriptions of the past and on the interpretation of these descriptions. Now descriptions can be good, bad or indifferent, and even the best description is but a poor substitute for an actual authentic specimen. Here comes in the importance of national herbaria and especially of the preservation of dried material of the original plants on which descriptions are based—what are called the *types*. Nowadays the value of the type is clearly realized, but this was not the case in the early history of nomenclature. Moreover, it was inevitable that numerous instances of mistaken identity should occur. It readily happened that more than one botanist described the same plant, which therefore had several names; sometimes more than one species of plant was included by the author under the same name; frequently a plant of one country was wrongly taken to be the exact equivalent of one in another country, and so on. Obviously there was need for careful scrutiny and sifting of evidence. Descriptions and names had to be assessed and as these are fallible, identity of actual specimens (*if* procurable) had to be established. That is a labour which is still going on. Even if the same plant was shown to have *four* distinct specific names, that was not the end of it. Which was to be used? The best? But which was the best? Opinions differed. And so botanists in conference at

Vienna in 1905 came to the conclusion that *priority* should be the deciding factor. The earliest properly described and defined name of a genus or of a species (with certain reservations) is to be regarded as the valid one. It was also evident that some date had to be fixed on as a starting-point and the date chosen was 1753, when the *Species Plantarum* of LINNAEUS was published. This seems a simple rule and in many cases has worked well. And yet, after thirty years, there is still doubt, or at any rate divided opinion, as to the valid names for quite a number of common plants. This is partly due to the confusion of the record, partly to variety of interpretation and to differences in the application of the rules. It is not for us just now to enter into details under this head, but it is an annoying factor in the problem and not easy to evade. To deal satisfactorily on a scientific basis with any genus or with any species it is necessary (and will continue to be necessary) to pass in review its written history, its original description, its synonyms, etc. No doubt at long length some measure of agreement will be reached, but it has proved a slow process. In this matter the major issue for botanical science and for horticulture is a measure of finality in the names of plants, especially in respect to those in common use. The choice of a name is of less importance than its stability. The rule of priority was instituted in the interests of stability as well as to give credit to precedence in description. Some of the changes (though they may be well within the letter of the law) have tended to instability, not to speak of the very natural annoyance caused when names long current have to be exchanged for names obscurely buried in the past. Admitted that the rule of priority has done good service, but it must also be admitted that it is a reproach to systematists that thirty years of travail have not abolished the dubiety which exists as to the correct names of some quite common plants. Let us hope that the deliberations of the recent Botanical Conference at Amsterdam have done something to remove this reproach.

We come now to the human reasons for diversity and here again I must be brief, for we shall find that the natural reasons are the most important and need fuller consideration. Nor will it be possible to keep the two categories separate, for they are closely linked and interact.

In the first place can we expect unanimity? Is there *any* field of human endeavour where there is unison of opinion? And further, is it desirable? Divergence is usually the path of progress. The views of a minority are oftentimes right. In my own land no one feels quite secure as to his theological tenets unless he forms one of an evident minority. We may conclude that there is no way of equating botanical minds—any more than any other kind of mind. In the sifting of evidence, in the examination of plant material, in the drawing of conclusions thereon, no complete measure of agreement is likely to be reached, even if the subject-matter were much less protean than it is.

But apart from this very obvious cause, what are the other considerations? At one time both descriptions and accompanying comments were written in Latin as an international language. Although

it has recently been reaffirmed that this is still necessary as far as the *diagnosis* is concerned, the comments more or less valuable usually appear in the native language of the describer of the species and the Latin summary is often quite inadequate. We have therefore not only difficulties in language but also in meaning, for translators (as in the phrase) are often traitors. Neither is the terminology any too exact, and so the same term may not have the same significance to two different writers. But even if these difficulties in interpretation are removed there remains the inadequacy of the written word. In the case of the best descriptions the working botanist knows how easy it is to go astray. All the more reason therefore for adequate herbarium material and for illustrations. Collections of authentic dried material in the various national herbaria are the all-important foundation for classification and nomenclature. But no institution possesses more than a tithe of representations of the world's flora, not to speak of the invaluable types. Much can be done by exchange and by loan, but at the best the written record has still to be interpreted.

How far does man's cultivation in gardens tend to aid? It serves to solve some problems, but obviously it has its limitations. Even in a genus of moderate size it is the exception to find in any garden more than a fair representation of the species. And their determination as to identity must be *proved* by the literature and by the herbarium. The garden supplies, too, its own errors. Are its records kept with scrupulous accuracy? Has there been no mixing? No hybridization? Does the plant in its new habitat show exactly the same characters as in its native place? I know cases where the garden plant has been described afresh as a new species by a competent botanist and the difference between it and the original duly quoted in support.

A most important factor is a change of viewpoint which may influence the majority of the systematists for one or more generations. In the middle of last century it would be fair to say that the resemblances between plants were of greater appeal than the differences, with the result that systematists of that time took a broad view of what constituted a species. To such is applied the term "lumpers." Their unit-species have more in their content than would be allowed by other systematists. There followed a period of much more detailed and critical examination of the native species, especially in those countries where the broad lines of the flora had already been laid down and where perhaps the flora was none too extensive. Further advance was only to be obtained by closer analysis. For many systematists this meant a much narrower concept for the unit-species and we had the advent of the "splitters." A shade of opprobrium may attach to these names, but you will understand that a "splitter" is one who fails to recognize that his three species are only one as you see it, while a "lumper" is so bold as to include in one species what you clearly see contains at least six different ones. Naturally few agreed as to how far "lumping" and "splitting" should be carried and it can be readily seen that unanimity was further off than ever. Both may be right—

each in his own way representing different viewpoints. A good illustration of the position as regards these divergences can be seen in our British Floras—a fairly restricted field. If the intelligent foreigner picks up one of our Floras he may conclude that at least 10 per cent. of our species belongs to *Hieracium*, but if he picks up another is no doubt relieved to find that there are only about six. Is there only one *Taraxacum* or is every Scottish island in process of securing a species to itself? Are we to trust the record of species and take North America to be polluted with *Crataegi*? In some cases the number of so-called units has become quite unmanageable. There are now signs of a reaction. This may be due to a return among systematists towards a wider concept of the species-unit; it has been aided no doubt by the results of ecological and genetical research, though these do not always lead in the same direction.

But let us take the expert—one who can be trusted to monograph a group with which he is presumed to be quite familiar. If there is only one he may receive a high degree of credence for some years—with good fortune. His fate is only delayed. If there are two or three experts for the same group disharmony is far more probable than unison. Instances will occur to those of you who have struggled with *Rosa* or *Rubus* or *Salix* or almost what you please. I am reminded of a farmer-friend's estimate of the working power of boys. "One boy is sometimes worth a boy; two boys are worth half-a-boy and three boys are no' good ava." Moreover, devotion to one limited group does not always lead to balance of judgment.

One last human reason. Anyone can describe new species provided he conforms to certain not very onerous rules. No licence is required. If he can get his descriptions printed—often no difficult matter—he can make as many as his discretion permits or his fancy invites. There is one apposite instance where a describer has published hundreds upon hundreds of new species from a comparatively little-known area in Asia. In hundreds of cases these are not in the correct genus and frequently not even in the correct family. Not one tenth of his species are valid. But where by chance he has described a new one, even if placed quite wrongly, the specific name has to be accepted and transferred to the correct genus. This is one of the less valuable aspects of the rule of priority, for it has to give credit where it is quite undeserved.

We come now to the natural reasons. These must be the most important and in great part responsible for the disharmonies already noted but not entirely so, for these would have arisen in any case. It is clear that classification and its nomenclature must be founded on certain principles or rules. In the early history of the subject these principles were sought by *a priori* means and sooner or later they were found quite inadequate and misleading. It is not possible to determine these principles theoretically. They must be obtained by study of the material, then formulated, then tested again and again until they are worthy of at least provisional acceptance. Only in this way can a natural system be founded which is in some measure reasonably accurate. Limiting ourselves to the Flowering Plants, can we formulate

certain standards—certain criteria—which can be applied *equally* throughout that group? Can we find a measuring-rod for families, genera and species? That was answered long ago by LINNAEUS and by ROBERT BROWN, who pointed out that criteria which are of great value for classification within the limits of certain groups may be valueless in other divisions. The material to be examined and classified is far too varied to be brought in mass within the confines of definite rules. In our efforts at classification we have to find these criteria, but we are faced at the outset by the *instability* of the criteria and by their limited field of application. Let us see how these factors affect the classification and status of families, genera and species.

The classification and definition of *families* present possibly the easiest introduction and are therefore taken first. In the historical sketch an outline was given of the gradual growth of a natural system embracing a more or less definite number of families of Flowering Plants. In the system of BENTHAM and HOOKER (1862–1883) 200 families were recognized and defined. Systems proposed since that date have added somewhat to the number, not by the discovery of new families but chiefly by the subdivision of previously recognized families deemed too heterogeneous to form one satisfactory unit. Many of the changes can be regarded as due to the old contention between “lumpers” and “splitters.” But apart from what may be called these minor alterations, the position is one of comparative stability—botanists are more or less agreed as to the status of the families. How have these families been determined? Not by the application of any rules or standards previously fixed but by inductive reasoning based on the analysis of a wide range of material. But once these units, the families, have been mapped out, the botanist feels impelled to make a synthesis and to place them in an ordered sequence based as far as possible on their natural affinities if such can be assessed. For this purpose he has to find certain criteria by which to judge the status of each family and its relative position in his system. At the same time and in supplement to his system he endeavours to make a key. Within the narrow limits of his key he has to try to imprison a mass of material almost protean in its variations. Still a key to the Families, even if imperfect, is a necessary adjunct to any system. The tried botanist may refer to it but seldom and it is not the best method of approach to the subject for the beginner. No really adequate key is possible. There are exceptions to almost every rule which can be put forward. Nor can the necessary criteria be used *evenly* throughout, for their value changes from one group to another. Among the major criteria are such conditions as are indicated by the botanical terms polypetal and gamopetal, apocarp and syncarp, superior and inferior ovary, axile and parietal placentation. In applying these and other criteria it is found that some families can be rigidly defined without possibility of confusion with the others. But there are some which must have a great latitude in their definition, such as the family Rosaceae (where there are both apocarpous and syncarpous genera, quasi-superior as

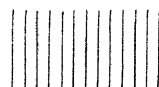
well as completely inferior ovaries). We cannot apply in these cases even the strongest criteria *absolutely*, for at once we would run counter to the *natural* arrangement.

Another familiar example of this inequality in application of the criteria is shown in the contrast between the families of the Polypetalae and those of the Gamopetalae. The former in the main have a greater latitude in their definition but nevertheless stand out more distinctly one from another; the latter form a much more compact group, are apparently more closely associated and are discriminated from one another often by criteria which would be of minor importance in the other series. While we may conclude that in so far as the *enumeration* of the families is concerned a reasonably stable position has been reached (leaving out questions of affinity *inter se*), we must use quite different measures in their assessment. *Ceteris paribus* we shall find the same problem in the evaluation of genera and species. What is the underlying reason for this? In a review of the families, it is usual to assess certain of them as old families and others as comparatively recent. If we accept the doctrine of evolution for the Plant Kingdom, it can of course be argued that they are all of the same age. But it is agreed that some (the older) families show characteristics which are taken to represent more primitive conditions of structure, while others show characteristics deemed more advanced. The position is therefore to be determined by certain criteria which may be reasonably correct but are not outwith challenge. Nor must it be assumed that an old family (as judged by these standards) is more or less primitive in all its characters—for it need not have stood still—has not in fact—and so may be advanced in certain respects.

Bearing in mind these caveats, let us assume for our purposes that botanists agree generally that polypetaly is a more primitive condition than gamopetaly, apocarpy than syncarpy, hypogyny than epigyny, etc. It is on such criteria as these that the systematist has to define the families, to judge their affinities, and to indicate—no easy task—their possible place in the evolutionary sequence. With the evidence derived from the families themselves and by the aid of these criteria, an important time-factor is introduced which goes some way to explain why different measures must be used in assessment. The older families have had (since their initiation) a longer time to diverge in their characteristics from their nearest kindred and their affinities are consequently more difficult to trace; the younger families are separated from their allies by minor gaps and are therefore more narrowly circumscribed in definition. Taking then our illustration of the Polypetalae and Gamopetalae, and allowing that it is impossible here to be precise, we may in a rough and ready manner set out the major families in a graphic way thus:



POLYPETALAE.



GAMOPETALAE.

The two groups differ markedly in the degree of divergence of their units. It is clear that even in this major operation of dividing the Flowering Plants into families there must be a great inequality in the importance of the criteria employed.

Certain points can now be discussed. Notwithstanding the irregularity of the scale, there is, as I have pointed out, a fair measure of agreement among botanists as to these families. It is true that the number no longer remains at 200 as in the system of BENTHAM and HOOKER. Quite distinct new families are now unlikely to be found or only very rarely. The list has been increased by the division of previously accepted families into two or more. We may take it that if there is to be any further alteration it can be only in the direction of further division. Is this procedure correct? Is it based on research and deeper knowledge? Is it expedient? For example we can divide Leguminosae into three families. It has long been recognized that this is possible, but the division has been kept *within* the orbit of one family. It is usual to regard the Compositae as constituting one family; but some authors consider that there should be three, and one author (BESSEY) makes fourteen. Which is correct? It is entirely a matter of opinion—all depends on the point of view. With this quasi-stability of the families (apart from subdivision) is there any immediate likelihood that research and further analysis will modify the main outline? Some families are closely linked together, *e.g.* Apocynaceae with Asclepiadaceae, Umbelliferae with Araliaceae, etc., but the relationships of the majority can only be guessed at. For the unravelling of the true affinities of the majority, we would require to delve into their past history and know something of their origins. When we have as yet no certain knowledge of the evolution of the Flowering Plants as a whole, we must admit that the time is a long way ahead before the testimony of the rocks can influence the problem. And is it expedient to have these minor alterations? I do not see that (with possibly a few exceptions) they serve any useful purpose. Where we have a reasonable degree of stability why not leave it alone until some *major* factor demands re-alignment? Further, to increase the number of units in a primary division is no gain to comprehension. Any botanical key is evidence on that point. However, I must not be taken to imply that the older systems and categories are sacrosanct and in no need of correction. But I must emphasize that changes which bring about only further division and are not based on new fundamental facts which have come to light do not invalidate the older systems. They represent sometimes a new viewpoint but are not necessarily more correct. The great majority of such subdivisions were recognized long ago and are not being given promotion by reason of any new discovery. They make the initial approach to the subject more difficult and for that reason are not welcome to those who have to give instruction thereon.

(To be continued.)



## PLANTS TO WHICH AWARDS HAVE BEEN MADE IN 1935.

**Brassocattleya** × 'Mayfair' var. 'Celia Neilson.' A.M. November 26, 1935. From N. Prinsep, Esq., The Boxes, Pevensey Bay. This well-proportioned flower is the result of crossing *B.-c.* × 'Mrs. Robert Paterson' with *C.* × 'Heatherwood.' The colour is soft rosy mauve, the labellum deep purple, fringed at the margin and with a yellow throat.

**Calanthe** × 'Wylam' var. 'Rose's Bower.' A.M. November 5, 1935. Shown by Clive Cookson, Esq., Nether Warden, Hexham. The spike bore many flowers of large size for the genus. On a creamy-white ground, the dorsal sepal and the two petals are much flushed with rose. *C.* × 'Angela' × *C.* × 'Ruby' var. *Cooksoniae*.

**Canarina abyssinica.** A.M. November 26, 1935. From Messrs. L. R. Russell, Richmond. A new East African representative of a small tropical genus, of which the best-known species is *C. campanulata* from the Canary Islands. The present plant is a slender climber with shining, toothed, cordate leaves 1 inch long. The campanulate, pendent flower is 2½ inches long and 1 inch wide, with 6 slightly reflexed triangular corolla-lobes. The colour is buff-yellow, striped within and suffused externally with brick-red.

**Carnation 'Silver Jubilee.'** A.M. November 19, 1935. For show from Mr. C. H. Cook, The Royal Gardens, Windsor. A perpetual-flowering variety. Plant of sturdy compact growth. Flower stems shorter than in most varieties. Flowers large, of good form and substance, less full than most varieties, a bright rich crimson, slightly scented.

**Chrysanthemum 'Caroline.'** A.M. November 5, 1935. From Messrs. Luxford, Sawbridgeworth. A large-flowered single variety with several rows of broad, pale blush-lilac florets slightly rolled at the edges. The blooms measure 5½ inches across.

**Chrysanthemum 'Carrow Glory.'** A.M. November 5, 1935. From Messrs. Luxford, Sawbridgeworth. A good deep yellow single variety with broad florets and a prominent greenish disc.

**Chrysanthemum 'Distinction.'** A.M. December 10, 1935. From Messrs. Luxford, Sawbridgeworth. A soft pink, flattish Incurved variety of American origin.

**Chrysanthemum 'George Prickett.'** A.M. December 10, 1935. From Messrs. Prickett, Enfield Highway. A medium-sized crimson Decorative variety having stiff florets with a golden reverse. It is a sport from the variety 'Claret.'

**Chrysanthemum 'Market Gold.'** A.M. December 10, 1935. From Messrs. Luxford. A deep golden-yellow Decorative variety of good form and substance.

**Chrysanthemum 'Mason's Orange.'** A.M. November 5, 1935. From Mr. T. Stevenson, Hillingdon. A very neat medium-sized single variety with several rows of soft orange florets and a narrow yellow zone round the disc. It is a sport from 'Mason's Bronze.'

**Chrysanthemum 'Southern Beauty.'** A.M. November 5, 1935. From Messrs. Burtenshaw, Worthing. A crimson-copper Incurved variety of good form. It is a sport from 'Ada Brooker.'

**Chrysanthemum 'Thanksgiving Gem.'** A.M. December 10, 1935. From Messrs. Luxford. A Pompon variety of American origin. The small, neat, old-gold flowers measuring  $1\frac{1}{2}$  inch across are borne in sprays which are very useful for cutting.

**Chrysanthemum 'T. Tyson.'** A.M. November 26, 1935. From Mr. T. Tyson, Crawley. A large, flattish, old-rose, Decorative variety, with the colour fading towards the tips of the florets and having a golden reverse showing at the centre. It was raised by the exhibitor.

**Chrysanthemum 'White Distinction.'** A.M. December 10, 1935. From Messrs. Luxford. An American Incurved variety with flattish white flowers.

**Cotoneaster 'Cornubia.'** F.C.C. November 5, 1935. From Lionel de Rothschild, Esq., Exbury. This most ornamental plant received the A.M. on November 28, 1933, and is described in the JOURNAL, Vol. 59, p. 303.

**Cypripedium × 'Balaclava.'** A.M. November 5, 1935. Shown by Lionel de Rothschild, Esq. In this well-balanced flower the round dorsal sepal has a whitish upper part and a greenish base, and it is profusely marked with blackish spots. The broad petals and the labellum are tinged with mahogany-red. The parents are 'Gwen Hannen' and 'Warrior.'

**Cypripedium × 'Creona.'** A.M. December 10, 1935. From Lord Aberconway, C.B.E., Bodnant, Tal-y-Cafn, N. Wales. (C. × 'Mme. Albert Fevrier' × C. × 'Psyche.') A distinct flower of medium size, the greenish-white segments profusely marked with blackish-purple spotting.

**Cypripedium × 'Rosy Dawn.'** A.M. December 10, 1935. From Lord Aberconway, C.B.E. (C. × 'Astarte' × C. × 'Gwen Hannen' (light-coloured form).) The flowers are of medium size, porcelain-white, tinged with pink, while the lower part of the dorsal sepal and the two petals are profusely marked with small rose spots.

**Euonymus radicans** var. *Carrierei*. A.M. November 26, 1935. From the Curator, University Botanic Garden, Cambridge. *Euonymus radicans* is an evergreen, Japanese shrub, very variable in habit and in the size and colour of its foliage. The present variety is a spreading plant suitable for planting in semi-shady places, where it produces lustrous, elliptic-oblong leaves 2 inches long and abundant greenish-white fruits which split open and reveal bright orange seeds.

**Gentiana ornata.** F.C.C. December 10, 1935. From Lord Aberconway, C.B.E. *G. ornata* was first exhibited by Mr. Hay on September 9, 1930, when it received the Botanical Certificate,



FIG. 12.—THE JUBILEE TROPHY IN CELEBRATION OF THE 25TH ANNIVERSARY OF HIS MAJESTY'S ACCESSION.

Awarded to Lionel de Rothschild, Esq., for the best group shown by an amateur at Chelsea Show, 1935.

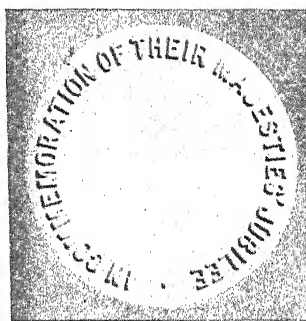


FIG. 13.—THE JUBILEE MEDAL.  
Struck in silver for the use of Affiliated Societies in Their Majesties' Silver Jubilee Year.  
(p. viii.)

the exhibitor receiving the Cultural Commendation. A year later it was given the Award of Merit. It was described in the JOURNAL, vol. 56, p. cx; and a good coloured plate was published recently in the Botanical Magazine, t. 9416. (See also JOURNAL R.H.S., vol. 60, p. 548.)

**Laeliocattleya** × 'Colorado.' A.M. November 5, 1935. Shown by Lionel de Rothschild, Esq. A charming flower of medium size and with thick-textured segments. The sepals are orange shaded with apricot, while the petals are somewhat similar and veined with rose. The labellum is mainly orange with apricot and cerise shading. *Cattleya Dowiana aurea* × *Laeliocattleya* × 'Yukon.'

**Luculia Pinceana.** F.C.C. December 10, 1935. From Lionel de Rothschild, Esq. This very handsome shrub received the Award of Merit when shown by Mr. Rothschild on January 14, 1930. It is described in the JOURNAL, vol. 55, p. cxlvii.

**Pleurothallis longissima.** A.M. November 26, 1935. This was represented by a well-grown plant bearing 41 erect racemes of greenish gold flowers. Exhibited by Mrs. Craven Moore, Duckyls, East Grinstead. It is a native of the West Indies, and was awarded a Botanical Certificate when shown by Mr. Measures in 1895.

**Salvia leucantha.** A.M. November 26, 1935. From T. Hay, Esq., Hyde Park, London, W.2. A Mexican shrub 2 to 3 feet in height, suitable for the cool greenhouse. The leaves are oblong-lanceolate, 3 to 4 inches long, covered beneath with white tomentum. The long racemes and the calyces are clothed with dense violet wool, contrasting effectively with the small, white corollas.

## THE AWARD OF GARDEN MERIT.—XXX.\*

BY F. J. CHITTENDEN, F.L.S., V.M.H.

192. AMARYLLIS BELLADONNA.

*Award of Garden Merit, April 16, 1934.*

The vast and interesting flora of the Cape provides few perennial plants fit for permanent positions in our outdoor gardens in England. So far as the bulbous plants go (and they are many) the habit of growing at a fixed time of year is so ingrained that they are apt to suffer from our inclement winters or springs; others, though they may survive, yet miss the heat of the South African summer and do not "ripen" enough to flower.

*Amaryllis Belladonna* is, however, sufficiently adaptable to make it well worth while planting if one can find a well-drained border under a south wall, or on a south slope, where the leaves will be protected from the worst of the frosts and cold spring winds. In the south-western counties it calls for less care. There are few more lovely flowers in September and October for the outdoor garden. If the normal rain has fallen the stout, compressed carmine-tinged naked scapes may be expected by mid-September, growing eighteen inches or so in height and lifting the eight or ten large rosy funnel-shaped flowers (which open successively) well out of reach of the naked earth that might otherwise besmirch them. There are no leaves at flowering time; these make their appearance in early January and grow longer as the spring advances, and it is then the need arises for such protection as has been suggested. They remain green until June or thereabouts, and then die down.

The large bulbs should not be lifted until the leaves are dead, and it is well to avoid injury to the roots as far as possible lest an unduly long time be taken to establish the plants again. They should be planted in July, and once planted they should be left alone until the threat of becoming overcrowded makes it necessary to lift and replant them.

*A. Belladonna* was introduced to cultivation long since, and apparently found its way to this country in 1712 via Portugal, and for a long time the gardens about Lisbon were the source from which the supply of bulbs was drawn, but they grow freely in the Isles of Scilly and in West Cornwall, and there is no need now to seek them from

\* The notes on the first hundred plants to receive the Award of Garden Merit have been collected from our JOURNAL, vols. 47 to 53, and published as a pamphlet, price 1s. For subsequent notes see vol. 54, pp. 218 and 423; 55, pp. 121 and 276; 56, pp. 80 and 245; 57, pp. 65 and 354; 58, pp. 171 and 400; 59, pp. 131, 308, 360, 406 and 449; and 60, pp. 89 and 545.

abroad. It is interesting to find that their long residence in this country has not altered their habit of developing foliage in winter.

There is an excellent picture of the plant in the Botanical Magazine, t. 733, and the various forms of the plant have been many times described in the pages of our JOURNAL.

### 193. EUONYMUS ALATUS.

*Award of Garden Merit, May 9, 1932.*

*Euonymus alatus* is singular among the species of its genus in having corky wings at the angles of its stem. Seedlings occasionally fail to develop these wings, and there may be two or four of them, but it was on account of their general presence that THUNBERG gave the specific name. The character which distinguishes this species definitely from others of the genus, when the corky wings are absent, lies in the fruit, the smooth-walled cells of which are separated almost to the base, instead of being joined for much of their length. The fruit walls are purplish, and they (as in other species) split when ripe in autumn to show the scarlet seeds.

Exactly when this species was introduced is unknown, but it has been in cultivation for a considerable time. It occurs wild over a large area in eastern Asia, being found in China, Manchuria, Korea and Japan. THUNBERG recorded it as *Celastrus striatus* and *C. alatus* from the last-named country as long ago as 1784.

*Euonymus* differs from *Celastrus* as now understood by its opposite leaves, and in this species the oval leaves are about 3 inches long, rather narrow, deep green, and finely toothed. The bush itself may reach a height of 6 feet, and its open spreading branches may extend it to nearly 8 feet in diameter. The corky wings make it conspicuous in winter, but its great value and the merit that brings it the present Award lies in the brilliant rosy-scarlet of its autumn foliage. If its fruits were more freely produced, they too would add to its outstanding value in the autumn garden, but they cannot always be depended upon, nor are the flowers very conspicuous.

A good loamy soil suits it well, and it will succeed in peat, but it should have a sunny, well-drained site. It was figured (but not well) in the Bot. Mag., t. 8823.

### 194. ENKIANTHUS CAMPANULATUS.

*Award of Garden Merit, July 25, 1932.*

Like *Euonymus alatus*, *Enkianthus campanulatus* owes its chief claim to a place in our gardens to the brilliance of its autumn foliage, but unlike that plant it demands a lime-free soil and flourishes in partial shade. It is therefore an excellent shrub for an open woodland site, especially in an old wood where the accumulated remains of long decades have left the deep humous soil in which this and many others of its family, the Ericaceae, delight.

*E. campanulatus* is a native of northern Japan and is quite hardy in this country, though its young growths are occasionally cut by late spring frosts. The leaves are usually grouped at the ends of the reddish twigs, are oval, finely toothed, about  $1\frac{1}{2}$  to 2 inches long, and dull green and hairy on the veins both above and below. The flowers are produced from the ends of the twigs and hang in a rather crowded cluster on hairy stalks about  $\frac{1}{2}$  inch long. In the typical form they are yellowish with red veins and reddish tips to the petals, but there are variants towards white-flowered forms (var. *albiflorus*) and red (var. *Palibinii* figured in Bot. Mag., t. 7059). The bush is usually vigorous and about 4 to 6 feet high, though it may reach a much greater size in very favourable conditions. The flowers which open in May are about  $\frac{1}{2}$  inch long, open bell-shaped, and quite abundant and conspicuous enough to warrant the plant a place for them alone, but it is in the autumn when the foliage becomes brilliant red that it forms one of the most striking and pleasant of the many pleasant sights in the Wisley wood. It is a worthy plant for any similar open oak or birch wood in the country.

#### 195. SALVIA $\times$ SUPERBA.

*Award of Gardem Merit, October 7, 1925.*

The origin of this fine herbaceous perennial plant is unknown, though the plant itself is well known and widely distributed in gardens. It is undoubtedly related to the European *Salvia nemorosa* (*S. silvestris*) and both these names have been applied to it, but it cannot be included with this species. It has also been called *S. virgata*, but erroneously. It is commonly known in gardens and nurseries by combinations of these names, *S. nemorosa virgata* and *S. virgata nemorosa*, and also occasionally as *S. silvestris superba*. As none of the names quoted really belong to it specifically, when the late Dr. STAPF wrote of it in the Botanical Magazine (t. 9169) a new name had to be found and *S.  $\times$  superba* was chosen. The plant is probably a hybrid and it never sets seed. It is, however, very readily propagated by division and it should be in every herbaceous border.

It grows to about 2 feet in height; its branching stems are stiff and twiggy enough to need no staking; it flowers almost continuously through summer and autumn; it does not spread unduly; it puts up with drought without obvious distaste; and above all it is a pleasing plant useful in all types of soil, and hardy all over the country.

The flowers are in long slender stiff spikes, blue purple, rather small, and very abundant, and each is in the axil of a bright red bract, so that even when the flowers are past the plant is ornamental.



## BOOK REVIEWS.

"Complete Gardening in India." By K. S. Gopalaswamiengar. 8vo. xiv + 581 pp. (Huxley Press, Madras, 1935.) 10 rupees.

In his book on Gardening in India Mr. K. S. Gopalaswamiengar has written a very comprehensive account of all details for making a good garden. It is written principally for South India for the plains and hill stations and should prove very useful to all interested in gardening.

Chapters 3, 4 and 5 give a good description of soils, manures and tools, etc. Chapter 6, on methods of propagation, is very clear and gives all details of the ways of propagating all kinds of plants, trees, or shrubs, etc. There are good lists of all the best plants and shrubs suitable to an Indian garden, and I would strongly recommend anyone living in India to read this book carefully and follow the instructions contained therein. I would also suggest growing as many of the indigenous plants as possible, as they are far easier to grow than those one grows at home, and there are so many interesting and lovely plants that it is well worth while doing so. The last few chapters include the growing of vegetables and fruit, and are full of useful information.

BEATRIX STANLEY.

"Gardening for Amateurs in Malaya." Edited by Mrs. E. D. Butler. 8vo. 91 pp. (Y.W.C.A. of Malaya, 1934.)

Everyone who has to garden in Malaya will welcome this little book of articles written by people who have done it, written without unnecessary words, and written with the idea of helping others, even beginners without experience of gardening anywhere.

Methods, choice of material, and difficulties to be guarded against are all dealt with faithfully.

"Rock Garden Plants." By C. Elliott. 8vo. 328 pp. (Arnold, London, 1935.) 7s. 6d.

Mr. Elliott's rock plants are plants which he considers suitable for a rock garden—plants which he has seen and generally grown (or, as he says, sometimes killed).

He therefore omits (1) plants he has not seen, and (2) plants which he considers unsuitable for the rock garden.

The book is thus a personal account, and as it is written by one of wide experience and with definite ideas of what is fitting it is a valuable book. Anyone who can grow all the plants mentioned as likely to grow will have a very well-furnished rock garden, and any who attempt it will find much to help them in the cultural hints and experiences given. On the whole the illustrations are excellent too, but too frequently give no idea of scale. There are, for instance, opposite p. 162 two plants figured from photographs both excellent in their way, but there is nothing to show that the flowers of *Lewisia rediviva* are not nearly as large as those of a well-grown plant of *Meconopsis integrifolia*, or opposite p. 270 that the inflorescence of *Saxifraga longifolia* is more than three-quarters as wide as that of *S. Sibirica* and many times longer.

A book on these lines too may not express the reader's own experience. Either the author has not seen it, or the specimen was quite untypical, or his estimate of values is quite different from most, for he describes *Meconopsis superba* as having a "flamboyant fountain of rather mean whitish flowers." There is little wrong with this description, except that the inflorescence bears no resemblance to a fountain, is not flamboyant, and does not consist of mean flowers and they are not whitish. They are in fact large, with pure white petals of solid texture, a great boss of golden anthers and a purple stigma, and are probably the most lovely flowers of any *Meconopsis* though, alas, still rare. He might have warned his readers that *Meconopsis betonicifolia* (which he calls *M. Baileyi* in spite of knowing better) does not always produce flowers of "piercing intensely brilliant pure blue"—some of the plants (so far as their colour goes) would be better strangled before they annoy. He might have warned his readers too that several of these *Meconopsis* are too large for the small rock garden.

Can it be that Mr. Elliott has never seen *Crocuses* or *Colchicums*, dwarf *Conifers* and a host of other dwarf shrubs as "alpine"-looking as any *Daphne*,

*Ionopsidium acaule*, the lovely rose form of *Ramondia Myconi*, and many another plant passed over in this book? Or is he perhaps going to give us another book entitled "Rock Plants I Forgot" as he promises to give us one on the making of "Rock Gardens, Alpine Lawns and the Like"?

"The Genetics of Garden Plants." By M. B. Crane and W. J. C. Lawrence. xvi + 236 pp. (Macmillan, London, 1934.) 10s. 6d. net.

This convenient and well arranged handbook on the Genetics of Garden Plants supplies a great need and should be in the hands of every plant breeder and scientific gardener for everyday use and reference.

The great feature of the book is that it is at once soundly practical and soundly scientific, and its publication is a landmark in the history of scientific horticulture. It is peculiarly fitting that such a work should come from the John Innes Horticultural Institution which, under the leadership of William Bateson and his successor Sir Daniel Hall, has done so much for scientific horticulture. The book opens with an admirable introduction by Sir Daniel Hall and is dedicated to the memory of William Bateson.

The two authors, Messrs. Crane and Lawrence are both practical gardeners, the senior author being the pomologist and the junior author the curator at the John Innes Horticultural Institution. For twenty years Crane has been carrying out pioneer work in the genetical breeding of Tomatos, Plums, Peaches, Cherries, Apples, Raspberries and other cultivated fruits, and has made some remarkable practical and scientific discoveries which are fully described in the book. One of the most interesting of these is the origin of the garden Plum (*Prunus domestica*) from the hybridization of the Sloe (*P. spinosa*) and the Cherry Plum (*P. cerasifera*).

For many years Lawrence has concentrated on the genetical breeding of Dahlias of various species and he has succeeded in unravelling the complicated story of the origin of the garden Dahlia from the wild species of Mexico. The results of his labours are given in the book and go far to provide us with a plain and intelligible scheme of Dahlia breeding which, containing as it does some novel and interesting features, should be exceedingly helpful to plant breeders generally.

The book is well arranged in ten chapters and although necessarily technical in substance it is simply and plainly written. The first three chapters deal briefly, but adequately, with the fundamental elements of genetics and Mendel's laws of heredity. The first chapter on the genetics of diploid plants deals with the gene as the unit of heredity in concise and simple fashion while fully recognizing and indicating the many complexities and complications which arise even in the simple diploid species. The striking fact that the difference between a peach and a nectarine is due to the action and segregation of a pair of genes Dd, so that the genes DD and Dd produce a peach and the genes dd a nectarine, will appeal to the practical gardener and prepare the way for the more complicated study of glandular and eglandular peaches and nectarines leading up to the complex interactions of various genes with one another.

The second chapter on the cytology of diploid plants introduces us to the all important chromosomes which carry the genes and link them together within the nucleus of each cell. Here we have the visible mechanism of heredity, variation, evolution, and life itself. All this leads up to the third chapter on the cytology and genetics of polyploid species and hybrids which in recent years have provided a key to the many complex problems of plant breeding. The important distinction between polyploid varieties and polyploid species is duly stressed and the complex inheritance and significance of polyploidy in horticulture is clearly indicated. Once the first principles of Mendel's laws of heredity and the fundamental mechanism of the chromosomes and genes, so clearly enunciated in the first three chapters, are thoroughly grasped and clearly understood, the remaining seven horticultural chapters are easy going for the intelligent gardener.

In the fourth chapter on flowering and ornamental plants, the history and genetics of the Sweet Pea, garden Stock (Matthiola) Chinese Primula, Dahlia, Antirrhinum and Delphinium are rather fully dealt with and provide an interesting story.

In the fifth chapter the genetics of the Tomato, garden Pea, Radish, Lettuce, Onion, Beet-root, Cucumber and Potato is set forth in considerable detail under the title of Vegetable and Salad Plants.

The sixth chapter is devoted to the genetics of fruits, including Peaches, Nectarines, Raspberries, Gooseberries, Red, White and Black Currants, Cherries, Grapes, Strawberries, Plums, Pears and Apples. Naturally, owing to the pioneer work of the senior author, the genetics of fruit trees is presented in considerable detail and chapters eight and nine on incompatibility and sterility in fruits are

an important addition to our knowledge of the subject. Every practical fruit grower, amateur or professional, should read, mark, learn and inwardly digest the details given in these valuable chapters which deal in a masterly manner with the fundamental causes of fruit fertility and cropping and are consequently of vital importance to the market grower.

Chapter seven on Bud Sports, Variations and Fluctuations is of considerable interest to nurserymen and propagators generally. It clearly explains the true nature of bud-sports and graft chimeras as revealed by recent genetic experiments.

The tenth and final chapter is devoted to a general survey of the modes of origin of new and improved forms of garden plants, a close study of which will yield much profit to the plant breeder. It will not only inspire him to greater efforts, but it will at the same time indicate to him many genetical short cuts to success. Naturally it is a complicated story that the authors have to unfold, but the fundamental principles are simple, being based entirely on Mendel's discovery of the gene and on the more recent work on the chromosomes which carry the genes. It is evident that a practical knowledge of genes and chromosomes is now absolutely essential to the successful breeder who wishes to create new forms of garden plants in the shortest possible time.

A useful glossary of genetic terms and a full bibliography of genetical papers and books, together with an index, complete one of the most useful and important horticultural books that has appeared for many years.

In reviewing such an admirable and sound work, it seems ungracious to criticize, but since a new edition of this book may soon be called for, it may be useful to suggest that in a second edition references might well be made to the more recent work of the Russian geneticists on the new potato species discovered in South America, and also to the genetical and cytological work that has been done in *Rhododendrons*, *Roses* and *Orchids*.

C. C. HURST.

"The Romance of Gardening." By F. Kingdon Ward. 8vo. 271 pp. (Cape, London, 1935.) 7s. 6d.

As everyone knows, Captain Kingdon Ward is one of that band of enthusiastic explorers of China and the Tibetan borders who have enriched our gardens by the introduction of many plants, some of which are gradually finding their level among the plants we cherish. Many have come for a while and gone, perhaps never to return. A few have penetrated even into the gardens of the humble, and by and by will be as familiar and as dearly loved and cherished as the Sweet William, the Madonna Lily and the Hawthorn.

In this book Captain Ward has (in his own words) "set down some of my experiences and ideas, and have tried to link up such diverse, yet kindred subjects as plant hunting, gardening, and the science of botany, which together have contributed so much to the beauty of modern England."

The result is perhaps somewhat discursive, and at times somewhat turgid, but it will be read with interest by many who have seen and grown such things as *Primula Florindae*, *Meconopsis betonicifolia*, *Lilium Wardii*, *Gentiana sino-ornata* and many other plants which he has introduced. He gives a list of his chief introductions on pp. 265-268, and on the following pages another list of plants he deems worthy of introduction.

"The New Garden." By R. Sudell. 8vo. 348 pp. (English Univ. Press, London, 1935.) 5s.

This book is intended for the maker of a garden on a new site. It advises consideration of the surroundings, especially in relation to existing trees, suggests possible plans, and describes the way to carry them out. Later, details of plants and planting are given. Here, in some instances at least, some more intimate details would certainly be appreciated by the novice—and if not possible on account of space to include them, then an indication of where they could be obtained would be useful. Considerable space is devoted to trees and shrubs and quite rightly, and here it would be quite easy to pick holes in the examples chosen, but if care be taken to compare one list with another much may be learned. The novice might be forgiven if after being advised to plant as shrubs *Cornus canadensis* and Magnolias on lime-free soils he finds some unlooked for differences in the value of the term "shrub"—for there is no indication of the size likely to be attained.

Once again we would warn the novice, if any such reads this note, against the use of *Cupressus macrocarpa* as a hedge. So far as the greater part of the country is concerned it is the world's worst hedge!

"The Gardeners' How Book." By C. G. Sherlock. 8vo. xx + 358 pp. (Macmillan, New York, 1935.) 15s.

The author, as editor of a magazine, has had numerous questions sent to her and now attempts to forestall them by this book. The result is a useful compendium arranged in chapters so as to bring together related subjects. There is no index, but intelligent use of the full table of contents (pp. ix-xvii) will compensate in large measure for this.

American conditions are in view all through.

"The Biology of Flowers." By W. O. James and A. R. Clapham. 8vo. viii + 116 pp. (Clarendon Press, Oxford, 1935.) Price 8s. 6d.

This book deals with the forms of flowers, their development, and the ways in which they are pollinated. The early chapters are devoted to an account of the morphology of the inflorescence, the flower and the fruit, from the laying down of the floral rudiments in the bud to the dispersal of the ripe seeds, including pollination and fertilization. The greater part of the book is concerned with the practical examination of flowers. About thirty well-chosen examples are given; these are grouped according to their several modes of pollination and are accompanied by detailed descriptions and original drawings. All are common flowers of field or garden. Lucid directions as to dissection and drawing are supplied, in which it is noticed that the authors discourage the use of shading. While agreeing that "the usual effect is to obscure rather than clarify," one feels bound to remark that the judicious use of shading has contributed in no small measure to the admirable clarity of their own figures.

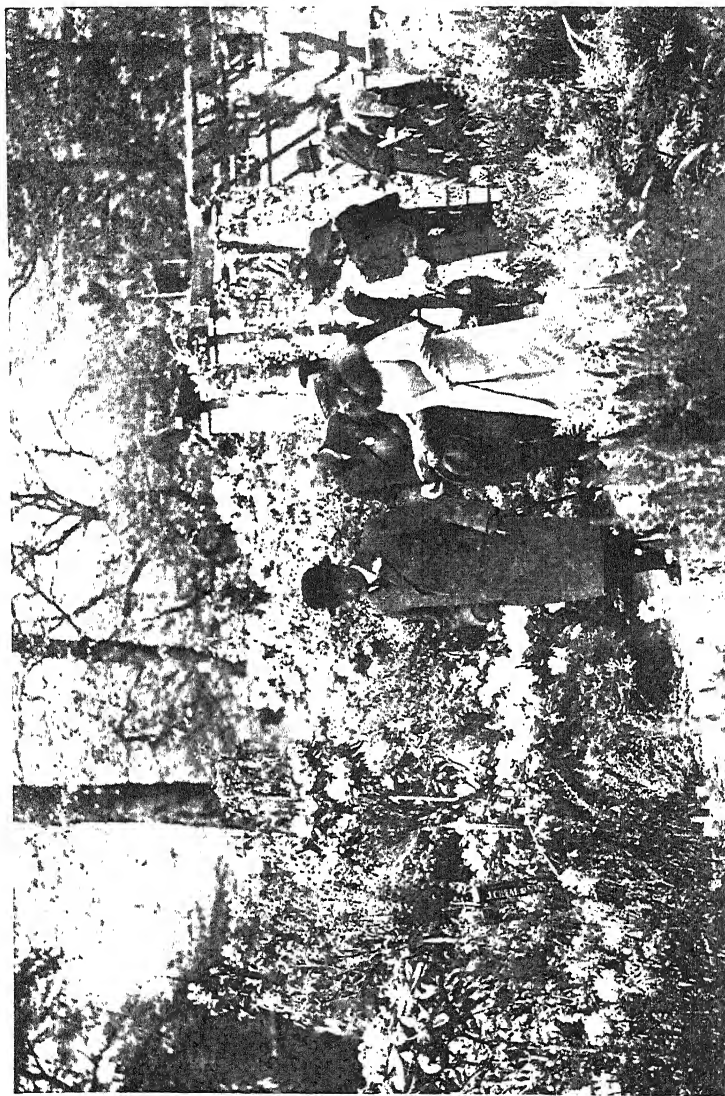
For each example the pollination mechanism is discussed, and the names of some of the more frequent insect visitors are mentioned. It is somewhat surprising that the species of *Bombylius*, in particular *B. discolor*, a very regular visitor to the flowers of *Primula vulgaris*, are omitted. Thrips, which are constant attendants in papilionaceous flowers, are not noticed; nor are *Collem-bola* (Springtails) given credit for pollinating *Aspidistra elatior*, of which snails and slugs are here said to be pollinators.

Two statements in other chapters invite comment. On p. 4 the authors assert that the spathe of Snowdrop, Narcissus and many other monocotyledonous plants is the single (posterior) bracteole. It is difficult to reconcile this statement with the fact that the spathe is often clearly bifoliate, and that in Narcissus it "commences as two separate, minute outgrowths which arise at a very early stage of the development of the flowers on opposite sides of the scape in a transverse plane to that of the true leaves" (E. A. Bowles, *A Handbook of Narcissus*, p. 28). On p. 38 one reads that zygomorphic flowers are symmetrica about no plane other than the antero-posterior. The meaning of the term zygomorphic is usually extended to flowers having lateral (e.g. *Corydalis*) or oblique (e.g. *Aesculus*) planes of symmetry.

These criticisms apart, we feel that the authors can be congratulated on their treatment of the subject. The illustrations are excellent and the general lay-out is attractive. Used as a laboratory manual in conjunction with lens and pencil, this book should prove of very great assistance to students of floral structure; to teachers also it can be recommended with confidence.

N. K. GOULD.





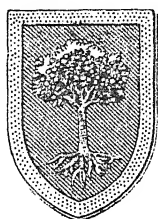
*[Reproduced by courtesy of The Times.]*

FIG. 14.—THE LATE KING GEORGE V, WITH HER MAJESTY QUEEN MARY, AT CHELSEA FLOWER SHOW, 1935.

*[To face p. 101.]*

# JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

Vol. LXI



Part 3

March 1936

## KING GEORGE V—PATRON.

THE patronage of the Royal Family has always been a source of great pride to the Society, dating as it does from the Society's earliest days, and it is with the deepest regret that we have here to record the death of our Patron King George V.

King George took a very friendly interest in the affairs of the Society, and in horticulture generally. His visits with Her Majesty Queen Mary are subjects of many very pleasant reminiscences to a great number of our Fellows. He associated himself with horticulture with the enthusiasm of a keen amateur gardener, assisting as he did in the introduction of new plants, for there are quite a number of Primulas and Meconopsis from the high hills of India now in our gardens which have been introduced through his kindly influence.

It is also of interest to record that his last work of a horticultural nature took place about seven weeks before his death, when he and Her Majesty Queen Mary planted in Buckingham Palace Gardens two trees of *Aesculus indica* raised in the Royal Parks from seeds from the trees at the Royal Botanic Gardens, Kew, in commemoration of their Jubilee.

Fellows will remember the interesting accounts of the Royal Gardens at Sandringham and at Windsor, which were published in this Journal by Royal permission.

At a special meeting of the Council on January 21, 1936, it was resolved to send an address to His Most Excellent Majesty King Edward VIII, and a wreath to His late Majesty's funeral. It was likewise resolved to send an address to Her Most Excellent Majesty Queen Mary, whom we are still proud to number among our patrons.

The addresses were as follows :

“ To His Most Excellent Majesty King Edward VIII.

May it please Your Majesty—

We, Your Majesty's loyal, attached, and dutiful servants, the President and Council of the Royal Horticultural Society, humbly approach Your Majesty on behalf of ourselves and Fellows with the expression of our deep sorrow at the grievous loss which has overtaken Your Majesty in the death of our beloved King George V, Patron of our Society.

His Majesty, both before and since his accession to the Throne, has ever shown a very friendly feeling towards the Society, and we can never forget the many visits with which he favoured us. We feel, as do all his subjects, that his death has been an irreparable loss to everyone throughout the Empire.

Signed on behalf of the Council and Fellows :

(Signed) ABERCONWAY,

25th January 1936.”

President.

“ To Her Most Excellent Majesty Queen Mary.

May it please Your Majesty—

We, Your Majesty's loyal, attached, and dutiful servants, the President and Council of the Royal Horticultural Society, humbly approach Your Majesty on behalf of ourselves and Fellows with the expression of our deep sorrow at the grievous loss which has overtaken Your Majesty in the death of our beloved King George V, Patron of our Society.

We shall always gratefully recollect the interest shown for so many years by Your Majesties in the fortunes of our Society, and the frequent visits with which Your Majesties have honoured us.

We desire humbly to express our deepest sympathy with Your Majesty in your great sorrow.

Signed on behalf of the Council and Fellows :

(Signed) ABERCONWAY,

25th January 1936.”

President.



## NOTES ON SOME NEW AND UNCOMMON TREES AND SHRUBS.

By EDWIN L. HILLIER.

[Read October 15, 1935 : Mr. T. HAY, M.V.O., V.M.H., in the Chair.]

As I was unable to obtain slides of some of the newer trees and shrubs desired, I have, in a few instances, introduced a genus with an older, though in my opinion equally attractive, species.

*Acer Lobelii* Tenore (fig. 15). This remarkable Maple is, as you see by its fastigate habit, very suitable for a street or avenue tree. It is allied to the Norway Maple, but the leaves are different in shape, of a peculiar and deeper shade of green, and sometimes as much as 7 inches across. It is strange that so desirable a tree, introduced 250 years ago from Italy, should be so seldom planted.

Regarding the newer Maples, one of the largest collections (including many tender ones) was planted a few years ago by the Lake of Killarney. I am told that the most effective species grown there is *A. Hookeri* Miq., an entire-leaf species which was introduced from the Eastern Himalaya some years ago. I have measured leaves as much as 8 inches long by 5 inches wide. It is too tender for general cultivation.

Other tender species are *A. Campbelli* Hooker f. and the ever-green section, viz. *A. Fargesii* Franch., *A. laevigatum* Wallich, and *A. oblongum* Wallich. Wilson sent home seed of the last species from Hupeh, and trees have proved hardy at Kew and elsewhere.

The most popular of the newer Maples introduced from China is *A. griseum* Pax (the Paper-bark Maple), famous for its autumnal leaf colouring and peeling shaggy bark showing the deep yellow younger bark beneath. It is a charming species of moderate growth rapidly coming into favour.

Another trifoliate Maple is *A. nikoense* Maxim., native of Japan as well as Central China. I prefer the delicate rose-madder shades of this Maple to the more brilliant tints of *A. griseum*. Unfortunately this species is andro-dioecious, *i.e.* one form is male only and the other hermaphrodite : so here is trouble for the nurseryman when his clients ask for a seeding tree ! There is a particularly fine specimen of this Maple in the large collection at Westonbirt.

The newest trifoliate Maple is *A. triflorum* Komar., introduced in 1923 from Manchuria and Korea. This is very nearly related to *A. griseum*. Our tree has attained 10 feet, and is growing too fast to show its capability for autumn coloration.

Beautiful Maples of the striated-bark group include :

*A. laxiflorum* Pax (*A. Forrestii* Diels). The lobed leaves distinguish

this tree from *A. Davidi*. The tree usually labelled *A. Forrestii* in gardens is a form of *A. Davidi*, differing from the type in its bright rhubarb-red young growths and in the reddish-tinged branches.

*A. Hersii* is in the same group. In some soils the autumnal leaf coloration is especially good.

*A. Grosseri* Pax, one of the newest species, introduced to Kew so recently as 1927, although one of the striated-bark group, is not so well coloured in that respect as *A. Davidi*, *A. capillipes*, and others.

*A. pennsylvanicum* Linn. var. *erythrocladum* L. Späth is a rare and unique variety of the striped-bark Maple, distributed by Messrs. Späth of Berlin in 1901. The branchlets by winter are brilliant crimson, even brighter than the Westonbirt Dogwood.

Two other new species of recent introduction belonging to the *Spicata* group are worthy of mention :

*A. erianthum* Schwerin is a very uncommon, attractive, small tree, though so far as I know it does not colour well in autumn. The seed-keys are at first brilliant rose and consequently very showy.

*A. Wilsonii* Rehd. is a pretty species related to *A. sinense*. The young leaves on our plants are deep coral-pink, passing to soft apple-green.

It may be as well to mention, for the sake of those who have had little or no experience in planting Maples for autumn leaf colour effects, that many species do not show the beauty of their autumn tints until they become well established and annually produce short summer growths instead of the long growths usually made by young trees. Moreover, it is advisable to plant Maples—and many other species of trees and shrubs—in poor to medium rather than over-rich soils.

Some species—e.g. *A. circinatum*, *A. Ginnala*, to a certain extent *A. griseum*, various forms of *A. palmatum*, and others—colour more or less every autumn in a variety of soils. Such is not the case with many of the Asiatic species mentioned above.

To sum up, the Maple trees need time, full sun, and good but not over-rich soil, and the planter, patience : these are a few of the many factors, not yet fully understood, which enter into the “make-up” of autumn leaf coloration.

*Actinidia Kolomikta* Maxim. is a beautiful, unique, hardy climber, a native of North-East Asia, China, and Japan. The finest plant I have seen is at Wallhampton, Hants : there on the south front of the mansion it has attained about 20 feet in height. It is strange that such a prettily variegated plant can be a species and not a variety. The leaves by June are more or less tricolored, the terminal half being white suffused and tipped deep shell-pink, just as if painted and touched up by a Japanese artist. The colouring seems better in the staminate form. The flowers are slightly fragrant, but not showy. A charming effect is produced in May and June by planting Clematis ‘Lady Northcliffe’ so that the deep lavender flowers light up the leaf coloration of the *Actinidia*.

*Actinidia polygama* Miquel has white with pale yellow leaf variegation, but is not so effective.

*Aesculus neglecta* Lindl. var. *erythroblastos* L. Späth is a striking coloured-foliage form of this species, distributed by Messrs. Späth, Nurserymen, Berlin, in 1902. They tell me that the present height of the original plant is 6 to 7 metres. The young leaves and shoots in spring are bright shrimp-pink, the leaves fading to yellowish-green as the season advances. The best plant I have seen is at Glasnevin.

Whilst speaking of uncommon species of *Aesculus*, I would recommend *A. splendens* Sarg. The panicles of this species are 8 to 10 inches long, the calyx red, the petals scarlet. This species eclipses the beautiful *A. Pavia*, neglected for so many years.

These crimson-flowered species of *Aesculus* or *Pavias* do not attain more than about 12 feet in height, and are therefore very suitable for small gardens.

There is no time to speak of the beautiful *A. indica*, *A. turbinata*, and others, but these are fairly well known and have been freely planted.

*Amelanchier canadensis* Med.—The tree often grown under this name does not represent this species, but *A. laevis* Weig. You may wonder why such a common species is mentioned to-day, but as there is so much confusion with the name of this species in gardens, I would state that Mr. BEAN, in his third volume of *Trees and Shrubs Hardy in the British Isles*, has cleared up the matter. This much-desired, beautiful spring-flowering tree called the 'Canadian Snowy Mespilus,' or 'June-berry,' has unfolding leaves of pale bronze; flower-buds rose, opening white; fruit purple-black, edible. The leaves in autumn in some soils turn bronzy-red, in others old gold.

A distinct and little known species is *A. asiatica* Endl., an elegant small tree attaining nearly 40 feet in its native habitat, but much less here. It flowers intermittently during the summer and possesses handsome foliage.

*Anopteryx glandulosa* Labil.—This beautiful evergreen shrub of the family Saxifragaceae at its best attains 40 feet in its habitat in Tasmania, but probably only about half that height in the mildest parts of the British Isles. The shrubs I have seen struck from cuttings are very precocious, flowering when quite small, so much so as to become stunted in growth. If seed could be obtained more easily, plants so raised should be more free growing. Introduced as long ago as 1840, it was usually treated as a greenhouse plant. The beautiful white-flowered racemes in early summer remind one of *Clethra arborea*.

*Berberis hypokerina* Airy Shaw (the Silver Holly *Berberis*, K.W. 6787) is, in my opinion, one of the choicest of the eastern *Barberis*. It was sent home by KINGDON WARD from Upper Burma. It has stood three winters in our neighbourhood (including the last spring frost) untouched, also at Nymans and elsewhere. It is a low spreading bush with large leaves up to 5 inches long, glaucous-white beneath; berries somewhat oblong, in clusters, blue-black when mature. The

mature stems are purplish-brown, almost black. The best plants I have seen are at Embley Park, Hants. This fine species and *B. insignis* (from Southern Himalaya)—though very distinct—are a choice pair for southern and western gardens.

*B. calliantha* Mulligan is another beautiful evergreen recently described.

*Mahonia Nevinii* Gray, though introduced from California in 1895, is still a scarce plant. It is probably one of the hardiest of the Californian group. There are quite good specimens in Hyde Park, and one at Burford that used to seed freely. The pinnate foliage is beautifully glaucous, resembling the more tender *M. Fremontii*, *M. haematocarpa*, *M. Swaseyi*, and *M. trifoliolata*, all of which have more or less vividly glaucous-white pinnate foliage, and need favourable climates.

When speaking of *Berberis* one must not forget the beautiful Chilean species introduced by Mr. H. F. COMBER: all appear to be hardy, though some are of slow growth with us. *B. linearifolia* Phillipi, though known and described as long ago as 1856, was not introduced until 1927 by Mr. COMBER: it somewhat resembles *B. Darwinii* in flower, but the individual flowers are larger and richer than in that species; they are followed by blue-black fruit, and the leaves are usually linear and entire. Mr. BEAN describes this as probably the finest of all evergreen Barberries. In gardens it appears to be slow in growth, and will probably not attain the height of *B. Darwinii*.

*B. montana* Gray is also a very beautiful, tall, deciduous shrub of elegant arching habit of growth, thickly studded with orange and yellow flowers followed by blue-black fruits. As it attains about 15 feet and grows bushily in its native habitat, it should be given ample space.

*B. chillanensis* Sprague much resembles the afore-mentioned in stature, colour of flower and fruit, but is not considered so beautiful a garden shrub.

*B. Coomberi* Spr. & Sandw. is a slow-growing evergreen shrub, scarcely attaining 4 feet. It suckers freely when it becomes established, so much so that Mr. BEAN says it may attain a diameter of as much as 15 feet. The flowers are very large, and orange-yellow.

*B. lologensis* Sandwith is a natural hybrid between *B. linearifolia* × *B. Darwinii*, with larger, richer flowers than the latter.

As I could not get a slide of a new Birch, I am showing the beautiful *Betula nigra* L. (the River Birch) (fig. 16). Although favouring damp ground, this distinct North American Birch (introduced as long ago as 1736, but rarely seen) does fairly well in drier and even calcareous ground. Distinct in foliage and habit, its principal feature is the silvery-grey bark, which exfoliates in large patches, revealing the younger creamy bark beneath.

Amongst other beautiful newer Birches notable for bark coloration those now to be mentioned should be included.

*B. japonica* Sieb. var. *szechuanica* C. K. Schneid. is specially notable for its creamy and silvery bark. This Birch was erroneously distributed as *B. Delavayi* var. *Forrestii*, and is still sometimes found under this name. The latter, a very distinct Birch, is rarely found in gardens.

I suppose the majority of Birch lovers would "give the palm" to *B. albo-sinensis* Burk. var. *septrionalis* C. K. Schneid. The bark may be described as orange-grey to orange-red, exfoliating in thin flaky pieces. The type appears to be more of an alpine tree. I notice that the Birch introduced by HERS (Number 2122) is var. *septrionalis*. This beautiful species is still to be found masquerading in gardens under the name of *B. utilis* var. *Prattii*.

*B. utilis* D. Don. var. *Prattii* Burk. is the Chinese form of the Himalayan type and differs but little from it. In young trees the bark is usually mahogany-brown, in mature trees often silvery. I have occasionally seen young trees of *B. utilis* almost as showy as *Prunus serrula* var. *tibetica*. The very silvery barked forms of this Birch are as a rule referable to the Western Himalayan *B. Jacquemontiana* Späth.

*B. Ermanii*, introduced from Japan about thirty years ago, is worthy of note for the beauty of its bark. We have sown seed obtained from the well-known beautiful specimen of this species at Westonbirt on several occasions, but have never raised a true plant. All turned out bastards through the prepotency of the pollen from the adjacent native species. This well-known disappointment usually occurs with Birches, Oaks, Crabs, and many other genera when sown from seeds where various species are in proximity.

There are good specimens of the new Birches in the fine collection at Bodnant.

*Camellia cuspidata* Veitch is a beautiful, elegant, hardy Chinese species not so well known as the more showy varieties of *C. japonica*. The pure white flowers, about 2 inches across, are poised on elegant branches. One of the best I have seen is in the fine collection at Borde Hill, Sussex. It has a pretty pink-flowered companion when both are small in *C. Sasanqua* type. Some of the forms of the latter are double and, I consider, not so charming as the type.

*C. saluenensis* Stapf (*C. speciosa* of gardens).—This beautiful new Chinese Camellia, attaining 10 to 15 feet in Yunnan, is rare in cultivation. Mr. BEAN's third volume states that it is hardy and has flowered at Caerhays. There is a good specimen on the north Camellia wall at Borde Hill. Its colour is usually a charming soft pink shade. As FORREST collected at 7,000 to 9,000 feet, it may prove hardier than expected.

The single wild form of *C. reticulata* has been introduced by FORREST from Yunnan, where he found it at an altitude of 5,000 to 9,000 feet. This should prove hardier than the two forms in general cultivation.

*Caryopteris* × *clandonensis* is a pretty hybrid, probably *C. incana* × *C. mongolica*, raised by Mr. SIMMONDS, of the R.H.S., in his garden at Clandon, with flowers a very pretty powder-blue.

*C. mongolica* Bunge is a reintroduced species attaining 2 to 3 feet

with flowers violet-blue, crowding the upper half of the branches. This species has small leaves and thin pendent shoots, both silvery-grey-white at all seasons. It is a good companion for the grey-leaved *Perowskia atriplicifolia* for "My Lady's Blue and Silver-grey Borders."

*C. tangutica* Maxim., one of FARRER's reintroductions much resembling *C. incana*, is a taller grower than *C. mongolica*, with flowers of the same shade of blue.

All the species of *Caryopteris* flower late in summer and are very desirable shrubs.

*Clematis macropetala* Ledeb. was first introduced by PURDOM. This lovely *Clematis* belongs to the *Atragene* section. The flowers consist of four large deep blue sepals which have been measured up to 4 inches across; the centre mass of stamens and staminodes is lemon-yellow, turning french-white. Mr. BEAN tells us that this beautiful reintroduced species was known and collected just north of Pekin as long ago as 1742. It is quite hardy, and suitable for a low wall, a tripod in the open, or to ramble over bushes and rock in the rock garden.

*C. florida* Thunb. var. *Sieboldii* Sweet is a choice *Clematis* coming to the fore just now. The sepals are four to six, creamy-white, with bluish staminodes. It is very pretty.

*C. napaulensis* DC., better known as *C. Forrestii* W. W. Smith, is a tall evergreen climber flowering in clusters in winter; sepals creamy-white, stamens purplish. Our young plants grow in winter and not in summer. It is only suitable for mild localities.

A neglected tree is *Cornus controversa* Hemsl., often erroneously called *C. brachypoda*. This tree-like Cornel attains a height of 35 feet on the chalk as well as other soils. It is certainly a tree of character, the branches being in horizontal tiers and its foliage very handsome. The small creamy flowers are carried in large cymes, followed by metallic-blue-black fruits. There is a pretty variegated form.

Another beautiful Cornel is *C. Kousa* Buerger. var. *chinensis* Osborn, a Wilson plant, the four large bracts being white. I cannot understand why this fine species is planted so little: a good moist lime-free soil is all it needs.

Two older species must be included:

*C. florida* L. var. *rubra* West has bracts a bright rosy-pink—a most telling colour. One of the finest specimens I have "caught" at its best is growing in Pylewell Park, Hants. For pure-tone pink flowering shrubs (in my opinion) none excel this Dogwood and *Kalmia latifolia*.

*C. Nuttallii* Audubon is a large shrub in Britain, but a tree up to 80 feet high in North-West America. This species, and *Arbutus Menziesii*, are two of the "wonder" trees of the Pacific Coast. The bracts are four to six, white or tinged pink; fruit of good size, usually bright orange-red.

*Daphne retusa* Hemsley, one of the choicest of the Chinese species, has stood zero frosts at Winchester. It is a sturdy evergreen

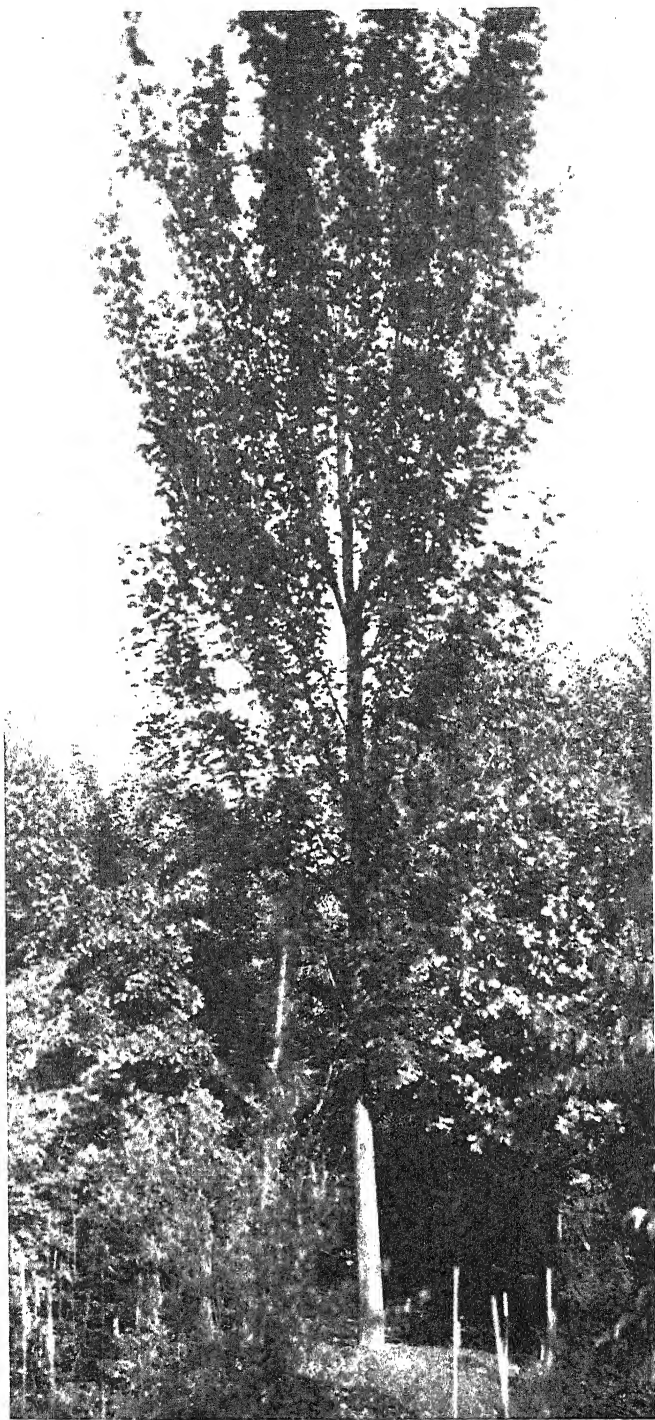


FIG. 15.—ACER LOBELII.

[To face p. 108.]



FIG. 16.—*BETULA NIGRA*.



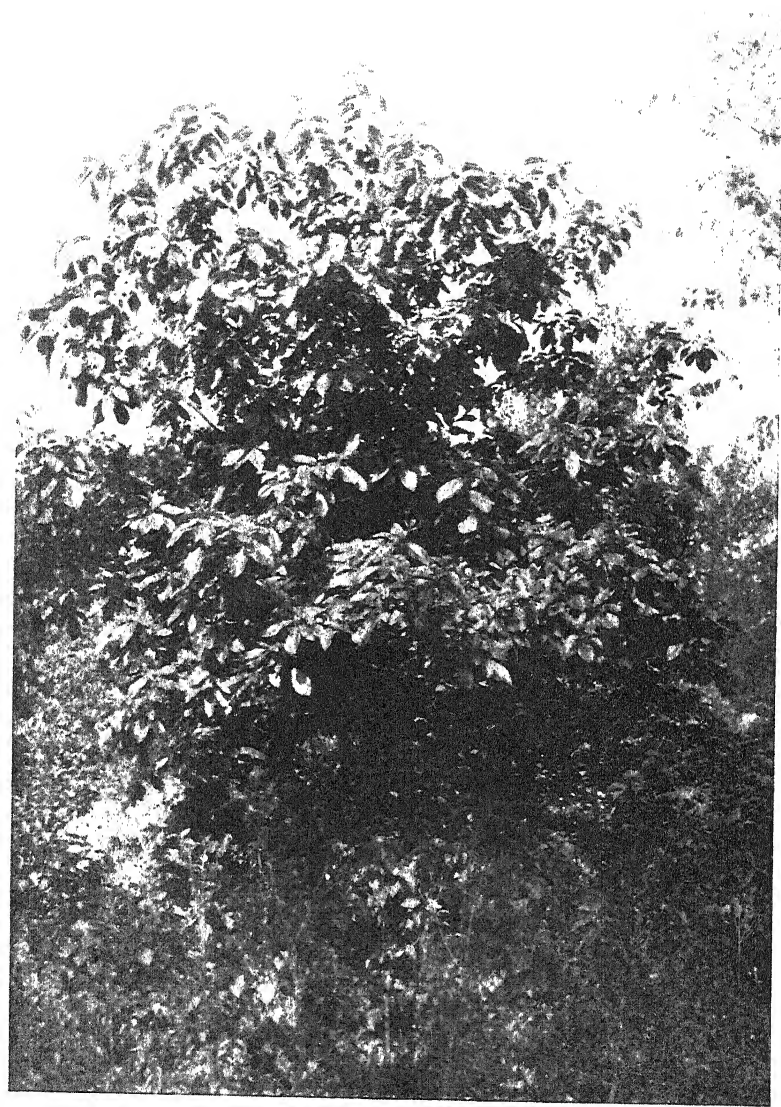


FIG. 17.—*EHRETIA DICKSONII*.



FIG. 18.—EUCOMMIA ULMOIDES (FEMALE).

[To face p. 109.

bush approximately 2 feet high and a first-rate grower. The flowers are fragrant and resemble those of *D. odora* (*indica* of gardens). It was introduced by WILSON in 1901.

Other choice *Daphnes* :

*D. aurantiaca* Diels is an evergreen, or nearly so, and perhaps the rarest of all *Daphnes*, with scented rich butter-yellow flowers. It is said to attain a height of 5 feet. In one place in Cornwall fourteen years ago I saw bushes which were then about 3 feet tall. Mr. BEAN tells us in his third volume that he has seen a plant at Caerhays 6 feet across. It is one of FORREST's choice introductions of 1906.

*D. Giraldii* Nitsche also has rich yellow fragrant blossoms produced in May with the leaves, but is deciduous, attaining about 3 feet. Flowers on pot plants are with us very evanescent. *D. Pseudo-mezereum*, having greenish-yellow flowers with a chocolate reverse, is often confused with *D. Giraldii* and is definitely attractive.

*Ehretia Dicksonii* Hance (*E. macrophylla*).—Fig. 17 represents the hardier form introduced by WILSON from China, whereas the Himalayan tree is on the tender side. On the chalk this fine tree grows as fast as some of the Poplars. It should be planted in a sheltered place, say with Paulownias and some of the Robinias, because, owing to the brittleness of its branches and large size of its leaves, it is very liable to injury : the last gale damaged our largest tree considerably. The fragrant white flowers are produced in short panicle corymbs, which are followed by round green berries, ultimately greenish-yellow. Our specimen is 20 feet high, with a girth of 21 inches and leaves up to 9 inches long.

*Eucommia ulmoides* (the Gutta-percha tree) should perhaps not have been mentioned to-day, but the illustration (fig. 18) shows what may be the only female tree that has fruited in Europe. I understand from Kew that only the male form has flowered there, and as we have had requests for root cuttings from Rome and Moscow Botanic Gardens, it would appear they also have only male trees. It is of little ornamental value and probably of no economic use. A year or two ago we had a long questionnaire from the U.S.S.R. on the possible economic use of this species as a source for rubber.

*Eucryphia* × *Nymansay* Messel is a beautiful hybrid between *E. pinnatifolia* and *E. cordifolia*. It is a remarkably quick growing tree in our neighbourhood and, I understand, in others also. It is as fast as *E. cordifolia*, which with us (only about twenty miles north of Exbury and other fine gardens near Lymington) is killed or hopelessly disfigured by winter frost. It grows about two or three times as fast as *E. pinnatifolia* with us, and thrives on calcareous soil at Highdown. I understand that the same cross has occurred elsewhere—for instance, at Mount Usher, co. Dublin.

*E. Billardieri* Späth is a charming, slow-growing Tasmanian species. Its white flowers are barely 2 inches across, but scented. One of the tallest plants in England is at Lanarth, where it has attained 20 feet in height. I saw it very large at Rostrevor, and as a 3-foot bush

in fruit in Sir HUGH DALY's garden in the Isle of Wight this summer. The variety *Milliganii* is represented by a good plant at Highdown, so this variety succeeds in chalk soil.

*E. Moorei* F. van Mueller has small white flowers, and is very tender and rare.

*Fraxinus Mariesii* Hooker f.—Difficulty in propagation is probably the reason for the scarcity in gardens of this, in my opinion, the most beautiful of all flowering Ashes. It is a low tree or bush of comparatively slow growth flowering in creamy-white panicles sometimes nearly 1 foot long, followed by showy purplish pod-like fruits. In winter the mouse-coloured wood-buds and ashen-grey bark are most attractive.

Other beautiful uncommon Ashes are *F. angustifolia* Vahl. var. *lenticifolia* Henry, *F. platypoda*, *F. velutina*, *F. xanthoxyloides*, and my favourite, *F. Paxiana* Lingelsh., an Ornus with very large leaves, lilac-scented inflorescence, and fawn-woolly buds in winter. It extends to the Himalaya, and was introduced from China in 1904.

*Genista cinerea* DC.—Fig. 19 represents a 10-foot specimen in full bloom. The branches are wand-like, so that it is difficult to catch it still for a good photograph. This scarce species much resembles the Madeira Broom (*G. virgata*), but differs in the shoots being more elegant, as well as in the flowers being more fully scented than *G. virgata*. In fact, in midsummer the air for yards around this specimen is delicately scented. It is difficult to propagate from cuttings and does not seed so far as I know. This beautiful Broom, the Mount Etna Broom (*G. aetnensis*), the Spanish Broom (*Spartium junceum*), and, last but not least, our native yellow Broom (*Cytisus scoparius*) are perfect for grouping.

A tree-like Broom has come into prominence of late : it is *Cytisus Battandieri*, introduced from the Atlas Mountains in 1922. The bold foliage is silvery and the heavy golden racemes of flowers are about 6 inches long. I saw a fine specimen in Sir OSCAR WARBURG's garden, and I understand there are good plants in Hyde Park. It will attain about 15 feet. Leaves and growth somewhat resemble *Piptanthus tomentosus*.

*Idesia polycarpa* Maxim.—This distinct member of the Flacourtiaceae family has been brought to one's notice rather frequently during the past two hot summers owing to the attractive panicles of fruit which have been produced. The leaves are large and red-veined, reminding one of *Populus lasiocarpa*. This species is usually dioecious, but sometimes polygamous. The panicles of apetalous greenish flowers are not conspicuous, but the orange-red fruits, deepening to dark crimson, are most effective.

Time does not permit to describe two other beautiful plants in this order or family, viz. *Poliothyrsis sinensis* and *Carrierea calycina*, both charming, tall shrubs : the latter flowered for the first time in Captain DESBOROUGH's beautiful garden in Dorsetshire.

One learns from REHDER that there are about seventy genera in

the Flacourtiaceae family, but only three are hardy enough for general cultivation in this country, and all three are monotypic.

*Indigofera Potaninii* Craib (fig. 20).—This charming woody species attains 6 to 8 feet, and appears to be hardier than most of the other species. The flowers are pink, paling as they mature, but being so continuously in bloom the whole plant during June, July, and August appears an elegant bush of pink and blush flowers. It is not so lax in habit as the other species.

*I. amblyantha* Craib.—No lover of flowering shrubs can resist the lure of the crimson flowers of this species. Those I have seen are more rosy-crimson than pink.

Both the above-named species were introduced from China about 1908.

*I. hebeptala* Benth. from the Himalaya is another richly coloured *Indigofera* with many flowers in a raceme. The standard petal is dark crimson, with wing and keel petals rosy-pink. This species is darker than *I. amblyantha*.

*Lagerstroemia indica* L. (the Crape Myrtle), native of China and Korea, is a beautiful shrub, hardier than is often supposed. It passes severe winters out of doors with us, but needs a very sunny wall to flower it well. The bright pink flowers are produced late in summer. It is well known to visitors to the Riviera.

I always class the lovely colour of this plant with that of *Albizzia Julibrissin* (the Pink Siris), the wonderful pink Acacia one sees in the Midi of France. I once caught this just in its prime at Les Barres—trees about 20 to 30 feet high one mass of clear bright pink flowers, a never-to-be-forgotten sight. Our summers are apparently not hot enough to flower this beautiful tree, which is much planted on the Mediterranean seaboard.

*Lonicera* × *Tellmanniana* Hort, a beautiful hybrid between *L. tragophylla* and *L. sempervirens*, was raised in Budapest and put into commerce by Messrs. Späth of Berlin. The late Sir WILLIAM LAWRENCE gained an Award of Merit for it in June 1931. This yellow flushed red variety, as one would imagine from the two parents, has no scent, but is a vigorous grower.

Speaking of vigorous growing climbers, I have in my garden two plants of *Schizophragma integrifolium* and var. *molle* on an east wall of the house, rather shaded, which have in five years grown about 25 feet high. When they started vigorously they grew 9 feet in one summer, whereas *S. hydrangeoides* is a slow starter with us.

Another beautiful but neglected Honeysuckle is *L. italica* Schmidt (*L. grata* and *L. americana*). Mr. BEAN says its origin is unknown, but it is probably a hybrid between *L. Caprifolium* and *L. etrusca*, perfectly hardy, richly scented, and, in the better forms, purplish-crimson. I remember one in the Isle of Wight about 16 yards long straggling over a terrace wall facing north—most pleasing for scent and beauty.

*Magnolia salicifolia* Maxim. is more often seen as a bush than

grown on a single stem. Mr. BEAN describes the type as being the upright narrow-leaved form possessing lemon-verbena-scented bark. Although the white petals are narrow and evanescent, yet the tree is elegant and worth a place in representative collections. The variety *concolor* is the stronger growing, more spreading form, with broader leaves and petals. It is also later in flowering.

An old favourite now very scarce is *M. Soulangeana* var. *Brozzonii*. Its noble flowers are longer even than those of *M. conspicua* (now named *M. heptapeta*) and are usually flushed rose.

Amongst the many recently introduced species from China I would like to mention two or three which have flowered in this country.

*M. Sargentiana* Rehd. & Wils.—This has flowered during the last few years at Caerhays and Nymans. Flowering in April or early May before the leaves, the large rosy-pink blooms are said to rival *M. Campbelli*, as well as being hardier and later. It is a good grower in the nursery, but, like the majority of Magnolias, it had the young leaves injured by the great spring frost of last May.

*M. Sprengeri* Pampanini *forma diva*.—This I have not seen, but Mr. BEAN, in his third volume, describes this beautiful Magnolia as flowering in April. The flowers are large, 6 to 8 inches across, rosy-carmine outside, and rival those of *M. Campbelli*.

The following, I think, have not yet flowered in this country : *M. Dawsoniana*, *M. mollicomata*, and *M. rostrata*.

Probably the best tree of *M. rostrata* in Great Britain is at Exbury. There also are the finest specimens of *Cercis racemosa*, which WILSON described as one of the most beautiful flowering trees of his many introductions. Instead of flowering in small clusters like the old Judas tree, the beautiful rose-pink flowers are in racemes.

*Nothofagus obliqua* Blume (the Noble Beech) was reintroduced by Mr. ELWES in 1902. This Chilean species appears to be hardier than *N. procera*, which was introduced to Kew about eleven years later. I understand that the latter species was cut to the ground at Borde Hill in the great winter of 1929, but this was not so with us on a neutral loam, where it grows very fast. Both species are deciduous and fast growing, but *N. obliqua* is rather the faster and, I think, the more handsome. This species has produced fertile seed in several places in southern England from which young plants have been raised. There are tall specimens about the country in many places : at Kew it has attained 80 feet.

Other fairly hardy species are *N. antarctica* Oerst. and its variety *uliginosa*, of which there are large trees at Kew and elsewhere ; *N. betuloides* Bl., an evergreen species from New Zealand most difficult to propagate, of which there is a very large tree at Grayshill ; *N. Dombeyi*, an attractive species hardy at Kew, for the introduction of which in 1916 arboriculturists are indebted to Mr. F. R. S. BALFOUR of Dawyck ; *N. Menziesii* Oerst., of which beautiful evergreen species there is a tree at Wakehurst, Sussex, fully 25 feet high, and others in Cornwall and elsewhere.

When speaking of New Zealand species of *Nothofagus* it might be of interest to say that New Zealand is rich in Mistletoe species parasitic on a number of genera. We have "sown" on *N. cliffortioides* imported seeds of the so-called Scarlet Mistletoe (*Elytranthe tetrapetala*). The botanist who kindly sent the seeds said it was parasitic on *N. cliffortioides* only, but according to CHEESEMAN it grows on several genera, such as *Metrosideros* and others. The yellow-flowered species of Mistletoe is *Elytranthe flavida*. According to our informant the flowers of both are quite showy, some three or four together, with corollas  $\frac{3}{4}$  to 1 inch long.

*N. Gunnii*, one of Mr. COMBER's introductions from Tasmania, is probably the hardiest of the Australasian species. Mr. COMBER states that at 3,000 feet altitude this species attains only about 8 feet.

In our woodland we have all the species (except two or three of the newest) ramping away amongst the Rhododendrons, and we are waiting for the next zero winter to find out the tender ones.

*Prunus communis* var. *Pollardii* is a beautiful new Almond, much deeper in colour than the type, especially towards the centre of the petals. It appears to be a vigorous healthy variety not liable "to gum." It is a great acquisition on chalky and other poor soils, in which the flower of the Common Almond is poorer in colour than on stronger and richer soils. I can find no authority for the varietal name, but I believe it to be of Continental origin.

When speaking of Almonds, I would like to mention *P. dehiscens* Koehne, a bushy-growing Chinese species introduced from Szechwan by WILSON in 1910. In poor soil, and with little pruning, it is dwarf enough for the back of a large rock garden, but at Highdown and Bodnant one sees it 12 to 15 feet high and about as much through. The flowers are bright pink in early spring and are a beautiful sight when most of the shoots are clothed with solitary blossoms.

I would also mention the following:

*P. × Blireiana* Andre.—Though not a tall grower, this is the best of the hybrid *Prunus* in the way of the *P. Pissartii* group. The flowers are early, large, bright rose, very double. From *P. Mume*, one of its parents, it obtains its large rosy blossoms.

*P. cerasifera Pissartii* var. *nigra*.—The buds and half-opening flowers of this variety are much deeper in colour than the type here. For a week or two last spring I admired a group of trees which were very beautiful.

*P. spinosa* var. *purpurea*.—This is slower growing, with beautiful, more translucent foliage than the much overdone *P. Pissartii*.

*Malus spectabilis* Aiton is a neglected but most beautiful flowering tree-like Crab. According to REHDER this was introduced from China before 1780 and is not found wild. The best variety is *Riversii*, perhaps better known as *flore pleno*. A strong growing tree, there are fine specimens in cultivation up to 30 feet in height: it is a glorious sight when in full bloom or bud about the end of April. The large flowers are rosy-crimson in bud, fading paler. The fruit is not

conspicuous. Usually the flowers are not produced on vigorous young trees. The variety *flore albo* is probably the purest white double flowering Crab. It may be a hybrid.

If one needs a white flowering bush Crab, one cannot improve on *M. Sargentii*, the flowers of which are purest white with yellow anthers, followed by cherry-like fruit.

Another even more neglected Crab is *M. micromalus* Mak. (the Kaido Crab), a hybrid believed to be between *M. spectabilis* and *M. baccata*. It was introduced from Japan about 1856 and is sometimes found in gardens under the name of *Pyrus spectabilis* var. *Kaido*, and even as *P. Scheideckeri*. Upright in habit (though not a tall grower) and early in blossom, this Crab is most effective with its deep rosy-crimson buds and opening flowers showing whitish petals mixing with the rosy tints.

Time does not permit me to give even short descriptions of the following choice species of *Malus*, viz. *M. crataegifolia* Sarg. (the Italian Crab), *M. coronaria* L., *M. magdeburgensis* (Schoch's *Malus*), *M. ioensis flore pleno*, *M. Oekonomierat* Echtermeyer of Späth (*purpurea pendula* of gardens), *M. theifera* Bailey, and *M. prunifolia fastigiata* (Ringo) (this has very beautiful large apple-blossom flowers and an upright habit of growth suitable for small streets).

Speaking of a fastigate tree reminds me of that useful tree the Dawyck or Pyramidal Beech raised at Dawyck, Scotland. It is a well-known fact that to pollard a Common Beech is to ruin it, but this beautiful variety can be planted in confined areas.

*Sorbus domestica* (*Pyrus domestica* var. *pyriformis* and var. *maliformis*) is a neglected rare tree and a doubtful native attaining 60 to 70 feet. The slide shown was made from one of the handsome trees at Kew. Someone has said that the true species cannot be obtained in nurseries, Rowan being made to do duty for it, but this is incorrect. Our mature fruiting specimen does not produce fertile seed. There is a most interesting account of this species in Mr. BEAN's third volume giving the possible reasons for considering it a native.

Speaking of *Sorbus*, we have young plants of new "over-looked" varieties or species of native *Sorbus* from Wales, Bristol, and Symond's Yat. I hope botanists will not make species of varieties if not sufficiently distinct to warrant the separation.

Other beautiful *Sorbus* are *S. Vilmorinii*: berries small, pinkish, set amongst beautiful fern-like leaflets. *S. munda-subarachnoidea* Koehne: berries small, pearly white; foliage also fern-like. *S. Esser-teauiana* Koehne (perhaps synonymous with *S. Conradinae*): leafage bold; berries large, bright red. *S. discolor* Hedl. (*S. pekinensis* Koehne): the trees in cultivation have red fruits; noted for the brilliant colour of its autumn foliage. *S. Wilsoniana* Schneid.: large handsome foliage; berries small, crimson, in large corymbs. *S. Sargentiana*: distinct scarlet berries, with bold leafage and woolly stems; winter buds large and sticky, resembling those of the Horse Chestnut.

*Robinia Kelseyi* Hutchins.—REHDER gives North Carolina as the



habitat of this beautiful *Acacia*. Attaining small tree size, this species is more elegant in habit and graceful in flower spike than *R. hispida*; the colour of the flowers is rather a brighter rose, added to which is the autumnal beauty of the oblong seed pods covered with bright purplish-red bristles. Altogether it is a charming low tree or large shrub attaining about 10 to 15 feet. This species withstands wind better than *R. hispida*.

It is to be regretted that *R. hispida* is so difficult to obtain on its own roots. In its habitat it is a suckering plant only 3 to 4 feet high, very floriferous, but rarely seeding. Grafted standard high, it is a certain prey for the first strong gale: it is better and beautiful as a wall shrub.

*R. ambigua* Poiret var. *bella-rosea*.—This is not a new variety, but a richly coloured form of the hybrid *R. ambigua*. It probably attains 30 feet, and is well worth growing in a select collection.

*R. luxurians* Schneid. (*neo-mexicana* Auth. not Gray) is a fast growing tree attaining 30 feet, sometimes producing its rosy flowers in August as well as June. If two trees are grown and one only pruned each spring a fine show of rosy-pink tree *Acacias* is assured in both the spring and autumn.

*Sassafras officinale* Nees.—Large specimens of this lovely and distinct autumnal colouring tree are scarce in this country; this may be because it is difficult to transplant and requires hot summers and good warm soil to mature its growth. There are good trees at Cannizaro, Wimbledon, and Claremont, Esher. The species is often dioecious, and I have not heard that its attractive blue, red-stemmed fruits have been produced in this country.

Besides the above, there is a Chinese species discovered by WILSON in 1900 and called *S. tzumu* Hemsley. This is probably not yet in cultivation.

A gorgeous autumn colouring tree, which I always associate with the *Sassafras* tree, is the Tupelo tree of the U.S.A., viz. *Nyssa sylvatica* Marsh., another large tree rarely attaining full size even in southern England. The only exception I know is the magnificent 80-foot specimen at Stratfieldsaye: I saw this at its best a few years ago; in the distance it resembled a giant Pear tree aflame from top to bottom.

*Viburnum bitchiuense* Makino.—This species was once sold as *V. Carlesii*, and as a small plant does not show the beauty of the species. It was quickly displaced in popular favour by *V. Carlesii*. During the last few years bushes of *V. bitchiuense* have developed into handsome plants far more elegant and colourful than *V. Carlesii*. The flowers, carried in large corymbs, are very sweetly scented, rosy-pink in the bud stage, opening paler. An 8- to 10-foot bush and nearly as much through is a charming sight, I think quite eclipsing the sturdy *V. Carlesii*.

Time will not permit me to describe a few other outstanding species and varieties of *Viburnum*—REHDER describes ninety-five. My

favourite dozen are *V. bitchiuense*, *V. betulifolium*, *V. Carlesii*, *V. Davidi*, *V. fragrans*, *V. ichangense*, *V. alnifolium*, *V. hupehense*, *V. Henryi*, *V. macrocephalum*, *V. tomentosum Mariesii*, and last but not least our native *V. Opulus*, with its coral, yellow, and amber fruiting varieties.

Arriving at my last note, it will be seen that I have refrained from giving botanical or even complete popular descriptions to the trees and shrubs enumerated: time would not permit this. Also, it is common knowledge that such descriptions can be obtained from books such as Mr. W. J. BEAN's most useful three volumes of *Trees and Shrubs Hardy in the British Isles*, Dr. REHDER's *Manual of Cultivated Trees and Shrubs*, and other first-rate books on trees and shrubs.

In concluding these few rambling remarks I take the opportunity to thank those who have so kindly lent the slides, particularly the Director of the Royal Botanic Garden, Kew, the Royal Horticultural Society, and Messrs. MALBY & Co.



FIG. 19.—GENISTA CINEREA.  
(p. 110)

[To face p. 116.



FIG. 20.—INDIGOFERA POTANINI.  
(p. III)

[To face p. 117.

## MASTERS LECTURES, 1935.

## PROBLEMS IN CLASSIFICATION OF PLANTS—II.

By Prof. Sir WILLIAM WRIGHT SMITH, M.A., F.L.S., V.M.H.

[Read November 26, 1935 ; Sir A. D. HALL, F.R.S., in the Chair.]

*(Continued from p. 90.)*

WE come now to the status of genera. The family is divided into genera. The procedure for classification must be on the same lines. The components of the family are analysed ; certain criteria are chosen ; on these a scheme of the family is built up and the genera defined. The criteria, however, do not make the genus ; it is from the analysis of the genera in the family that the criteria are derived. Naturally in the division of *one* family we must now use criteria of less fundamental quality—the distinctions to be drawn are based on comparatively minor points. There is therefore room for greater variance of opinion and subsequent non-agreement as to nomenclature. The time-factor, discussed in the matter of the evolution of the families, serves to illustrate one part of the problem. In some families the genera are fairly distinct, one from another ; such would naturally be the case in the more primitive such as Ranunculaceae and Rosaceae. Other families are divided into genera on very slender characters ; such on this evidence, would be taken as more recent in their evolution, as Umbelliferae, Cruciferae, Labiatae, Compositae. (I must, however, add that we are not entitled to assume that the families and their genera have evolved at the same pace in evolutionary time, but still we have a rough measure.) Consequently it is not possible to use an even scale of measurement, and criteria vary in significance from family to family.

The chief problem in the assessment of the genera in a given family is the *extent* to which division should be carried out. Here we have an example of the contest between “ lumpers ” and “ splitters.” Should we keep *Pyrus* as a unit or should it be broken up into half-a-dozen genera ? Should *Saxifraga* be a unit or are there a dozen genera embedded within it ? It is in the main a question of viewpoint. One cannot claim that the botanical researches of the last one hundred years have done anything to invalidate the conception of a genus as held by the “ lumpers,” nor anything on the other hand to prove that the view of the “ splitters ” is wrong. There is, however, an opinion held among many botanists and zoologists that division has gone much too far and that the biological sciences are suffering from an excessive multiplication of genera. With this view I am in sympathy. Allowing that

neither side can be proved wrong, and viewing the question from the point of view of efficiency in classification, I would hold that in the examples I have cited the increase in the number of genera is no aid to apprehension, is contrary to the *general* appreciation of the genera concerned, and adds considerably to the complexity of the nomenclature, tangled sufficiently as it is. I would not say that analysis can go too far, but in its progress synthesis sometimes is apt to be unduly forgotten.

It seems to me that in some cases a certain measure may be of service and one of interest to us as horticulturists. We have all heard of bigeneric hybrids and perhaps some of you have raised them. They are regarded as somewhat surprising and so they ought to be. We do not usually try to cross species of different genera for we know that results are exceedingly unlikely. If a hybrid is possible, it will be agreed that the genera are very nearly allied. How do we know that they are *different* genera? Well, the books say so. Are they botanists' genera or natural genera? They may be distinguished one from another by certain criteria, but Nature apparently transcends these distinctions. In classification it is incumbent to keep as closely as possible to a "natural" arrangement. It is perhaps too much to say that species which cross should always belong to the same genus, but when bigeneric crosses occur it is in most cases an indication that the line of division between the genera concerned is a very thin one. It is clear that if a proper concept of a genus is to be retained, then subdivision can easily go too far. But to formulate a rule for these cases and to apply it rigidly is quite another matter. Let us take an example to illustrate the difficulty in balancing the evidence. There are two genera in Ericaceae long established and well known—*Gaultheria* and *Pernettya*. They are distinguished chiefly by the first having a capsular fruit and the second a berry. Such a criterion in other affinities would be given less weight, as we can see in our own flora in the case of *Hypericum Androsaemum* where a fleshy fruit is in contrast to the capsular fruit of other *Hypericums*. In January 1935 there appeared an interesting paper by Sir ARTHUR HILL and Mr. BURTT on the genera *Gaultheria* and *Pernettya* in New Zealand, Tasmania and Australia.\* Here we learn that hybrids between the species of these genera are frequently found in Nature. Further, certain species such as *Pernettya lanceolata* can be regarded as bridging the two genera, which, in the Southern hemisphere, cannot be very definitely separated. Are we concerned here with one genus or with two?

Other examples occur in cultivation in such families as the Orchidaceae (very frequently), the Gramineae and the Liliaceae. In these families the systematist has had to use very minor distinctions in discriminating many of the genera. But perhaps the most striking bigeneric hybrid is *Raphanobrassica* of Karpechenko (*B. oleracea* × *R. sativus*), regarded as one of the greatest successes in experimental

\* Journ. Linn. Soc., XLIX. (1935), p. 611.

evolution. The Cruciferae are also a family in which the generic distinctions are necessarily finely drawn. But in most schemes of the Cruciferae, Brassica is remote from Raphanus—in quite a different tribe. Apparently then this is quite a wide cross. The chief distinction between the genera lies in the fruit and for systematic purposes it has always been a very satisfactory one. But there is little else beyond the fruit-structure to separate them. Must we then admit the possibility of such a wide cross or is it not evident that the two genera are *naturally* much nearer together than systematists have believed? And this in despite of the fruit-characters? Note, too, that the one species (*R. sativus*) which does cross does not afford a very convincing example of the typical Raphanus fruit. Such an experiment is undoubtedly a challenge to the current classification of the two genera concerned. Of course in the zoological world you have the same results. The genus Bos in the wide sense includes the various domestic cattle, the buffalo, the bison, the yak, the zebu and others. But they can be arranged in four or more genera. They hybridize and you have in a sense intergeneric hybrids. Divide the genus far enough and intergeneric hybrids become a commonplace. Rightly or wrongly the genus has lost status.

I have cited these examples to show that a broad concept of the genus seems more in conformity with Nature's own workings and that there will be no gain in forming narrower definitions. When genera begin to cross it is time to call a halt.

I have one further comment on the classification of genera. In the evaluation of the genera in a family, an attempt is often made to arrange them in some phyletic sequence—to construct a genealogical tree. If we accept certain criteria as valid, it is possible to say from their present-day aspects that one genus possesses more primitive characters than another. But the tracing of ancestors and probable origins is highly speculative. Such alignments may serve as a means of envisaging the series—giving a picture—but any conclusions come to are based in our present knowledge on quite insufficient data. All we have for analysis is represented in the end-products—the genera as they are to-day. To trace these to an original centre is an ingenious exercise—*et praeterea nihil*. We may form an estimate of the standing of each genus in a family but we cannot transpose that estimate as corresponding to the position in past time. Even if we allow the apposite criteria to merit a measure of trust, some genera may have gone speedily ahead in evolution while others lagged. For our data, based on the present, to have phylogenetic value, we would have to assume equivalent progress in past time—far too large an assumption. Moreover, the tendency usually is to telescope the past evolutionary history—often in the endeavour to find a common centre or even a prototype. It is much more likely that the preliminary divergences (a common origin being admitted) took place so far back in evolutionary time that a different set of criteria for their assessment would be necessary. A problem of the same nature, but much more difficult, would

be to find a common centre for the Dicotyledons, or for the Mammalia, within such a time-limit as would still show the descendants comparable with the ancestors in even broad morphological features. These attempts to elucidate the past history have their allure and the results of the detailed analysis and comparison are not without value. But the requisite genealogical data are still far too inadequate. The attempt to trace such genealogies varies in difficulty, for the farther back we have to go the more obscure the evidence, as is the way in any genealogical study. We are only now beginning to have some idea of the genesis of species and we have to confine the problem practically to present-day material. The origin of genera is much farther back and the data almost negligible. As for the genesis of families! We do not know from any record of the past the direct descent of a single genus nor indeed of a single species. In a general way we may try to form an idea of the line taken by development, but as soon as we come to details, we arrive not at facts but at speculation. Take for example four families which are usually, and no doubt correctly, placed in close association—Valerianaceae, Dipsaceae, Calyceraceae, Compositae. It is an easy assumption (BESSEY, 1897) that the Valerianaceae led to the Dipsaceae, these to the Calyceraceae, and so on to the Compositae. It cannot be proved and it is unlikely to be true. Take some genera—*Clematis*, *Ranunculus*, *Aquilegia*, *Delphinium*, *Aconitum*, *Paeonia*. What data can we find to link these together beyond their placement in one family?

We come now to species. The genus is divided into species. In classification and nomenclature the assessment of species is the chief issue of practical importance and the field of difficulty and dispute. I have left this bone of contention to the end. There is a measure of agreement as regards families and not too great variance as to genera, but species which concern the horticulturist most are quite another matter. The systematist takes the usual line—first an analysis of the species believed to constitute the genus—then follows the choice of criteria derived from that analysis—on these criteria the species are defined and arranged. Obviously the criteria employed will be of a much more restricted nature—the distinctions between the species-units much less easily drawn than between genera. We shall find as before that the criteria will have shifting values as we proceed from genus to genus and even within the same genus. A regular scale of assessment will not be possible. We may find evidence of correlation with a time-factor. Some genera may be more or less stabilized and their constituent species readily discriminated; others still very progressive with a multitude of closely related species.

Now it is clear that I cannot deal here with such debatable questions as the origin of species or even with the concept of a species except in so far as certain salient points concern problems of classification. I can but touch on both subjects. As I have previously remarked there was a time when the problem of what is a species appeared to be much less complex than is now found to be the case. Analysis has gone



much deeper. But then as now the problem was complicated by the main variables, different estimates and different points of view, and the instability and inequality of the units concerned. But long antecedent to the relinquishing of the doctrine of the constancy of species it was realized that the species-unit of the day was far from being homogenous. Subsequent research with collaboration from genetics and cytology has shown conclusively that the Linnaean species may be much more heterogenous than was previously imagined. To what extent has classification to take cognizance of the subordinate units of different status which may be included within a Linnaean species? We have obviously another phase of the old contention between "lumpers" and "splitters" with the added complexity that "splitting" can now be carried farther than ever—to the confines of complete inutility. Classification ought to supply a working arrangement. But the workers in the field have neither the same standards nor the same aims, yet although different all these may be quite legitimate. It may well be therefore that no one plan will meet all needs and that diversity of treatment is inevitable. As far as the horticulturist is concerned there is little doubt what type of classification for species serves in the main his purpose. I ought to introduce here two terms which are now commonly used—Linneon to represent the broader concept of the Linnean species and Jordanon to signify the subordinate units, or some of them, included within the Linneon. Species to the horticulturist as a rule correspond to Linneons. In the breeding of varieties he may have to study minutiae, but as a rule it is the broad concept with which he is conversant. If on occasion he does venture into the region of finer distinctions, he will, I believe, come to the conclusion which many of us have formed that the number of Linneons in a genus may be more or less finite while the Jordanons may quite well be infinite. The Linneon is a serviceable unit, variable as may be its significance and content. The horticulturist will continue to use what is essentially the old concept and one which lends itself to general appreciation. In the broad interpretation of the term it is so understood in our own and many other languages. It does represent a certain standard and a certain truth. An entirely satisfactory definition may not be possible, but it is not difficult to form a good working idea of what is meant by it. Suggestions, therefore, that the term species should be transferred to units of lesser status are not likely to receive general acceptance. Other terms must be found for units of lesser rank than the Linneon. It is evident then that a great degree of synthesis must pervade that type of classification which meets the needs of the horticulturist as also the needs of those engaged in compiling general floras. On the other hand the ecologist, the geneticist and the cytologist must have a system which can give expression to the results of their detailed analysis. Stated thus the problem may appear simplified, but it is perhaps a vain hope that even two categories will suffice for a field in which there is so much divergent opinion.

We must come now to some of the reasons for diversity in the

material to be analysed. This ought to entail a review of the whole field of enquiry into the origin of species and into the causes of variation. I must restrict myself to certain aspects of these problems which will not take us too far away from classification. As you are aware, many causes have been advanced in explanation of the origin of species and much evidence brought forward in support of each. It may well be that there is more than one way of making a species, for Nature is not uniform in her methods. I would speak first of hybridization. Within comparatively recent years hybridization has been brought prominently forward as one of the chief causes of evolutionary change and of the consequent production of species. LORTON has been the chief exponent of this view. For him it was the main cause, if not the only cause, for the evolution of both species and genera, perhaps even of higher categories. How far are we to regard his theory as valid for species? We are all familiar with the production in gardens of a hybrid between two distinct species (Linneons). This hybrid may present marked differences from both of the parents. A systematist, not knowing its origin and believing it to be from the wild, might have no hesitation in describing it as a valid species. According to his criteria the grade of difference would be quite sufficient. Breeding experiments of course would reveal the true state of affairs. Before going farther I must point out that hybrids are not all of the same rank. Hybrids may occur between Linneons of varying degrees of propinquity and frequently between Jordanons, as in many of our plants of cultivation as well as in the wild. These differences in status obviously add to the complexity of the material. Analysis would proceed on Mendelian lines, with more or less confirmation of the parentage according to the evidence available. In the first place how far do these hybridizations occur in Nature? As for Jordanons, it may be readily admitted that within the Linneon these subordinate units will in many cases act as inter-breeding communities. As for the frequency of hybridization between Linneons, the evidence is somewhat conflicting. In some countries, such as New Zealand, it is recorded as quite common; in other areas such as the Himalaya, West China and tropical regions generally it does not obtrude itself and is rarely mentioned by either systematist or explorer. This contrast may be due in part to different degrees of depth in analysis but cannot be thus wholly explained. For a genus may behave differently in various countries. The European *Primulas* show a high hybridization-frequency. In the Himalaya and China where the species are much more numerous, there is very little evidence of crossing. The Himalayan *Rhododendrons* have produced countless hybrids in cultivation; that they effect this in their own undisturbed area is not borne out by the collections of the last eighty years. But whether the natural hybrids be many or few, the question is, can these in the long run become so stabilized and so discrete from their neighbours that if we could see so far ahead we would accept them as distinct species? Obviously we cannot decide that point on the immediate data. But analysis of these

hybrids brings out what is now the familiar distribution of characters on Mendelian lines. Can we then in the past history of a genus find anything parallel which would warrant the assumption that hybridization had played a major part in the multiplication of its species? I believe there is good evidence in support. Let me take one example. I have just mentioned *Rhododendron*, a genus which in the Himalaya and in West China, the chief areas of concentration, is not, as regards its Linneons, an interbreeding community. Seeds carefully collected and properly correlated with the corresponding example of the plant itself come true. Of the numerous hybrids raised from Himalayan *Rhododendrons* I can find no parallels in material collected in the field. Apart from the Jordanons within each Linneon, these *Rhododendrons* can be regarded as a reasonably stabilized assemblage of species. A few years ago I was examining several series of *Rhododendrons*, noting specific differences and framing tentative keys. The material was very ample and had been collected from different localities over a wide range of country. In the analysis of any one series my co-worker (the late Mr. H. F. TAGG) and I would fix on *e.g.* six major criteria, representing six pairs of more or less opposed characters (familiar to those who consult the book *The Species of Rhododendron*). It was evident that these criteria were distributed in true Mendelian fashion throughout the series. Naturally all possible combinations were not present. But it became possible to predict that such and such a combination would be likely to be found among the abundant unnamed material of the series received from recently explored areas. Now and again this proved to be the case. We could even have described in all its major characters an unknown species not yet collected but with a good chance of its ultimately coming to light. On average systematic criteria the majority of the units could be regarded as Linneons. In dealing with plants raised from seed of these units there is no definite evidence of recent hybridization. But in many cases it seems to me clear that hybridization at earlier epochs was a potent factor in the present-day multiplicity of species. Whatever the agencies tending to stabilization, the species now run true from seed. (It does not follow that hybridization is of similar importance in all genera, nor that it is necessarily of great moment in divergent evolution, for the possibility of securing marked changes through permutations alone appears to be limited unless influenced by other factors.)

Further, although in any one series of this genus the Mendelian factors or criteria may be evident, they do not fall into one simple scheme. The factors present themselves in varying degrees of importance; a factor of some moment in one part of the series may be of much less critical value in another part. The hybridizations even for one series in a genus presumably occurred at different times, in different places and with varying import. Many gradations appear.

We can see from the foregoing how this one cause, hybridization in the past and in the present, can very seriously puzzle the systematist. He is presented with what appear to be units, but they are not of

equivalent value. In his appraisalment he would like to arrange them in orderly fashion and they often happen to be very disorderly. He could of course give a general description of the mob but for purposes of classification he has in some way to cut the Gordian knot. He must use his judgment and endeavour to define the species and if need be subordinate categories. Would a second systematist, working independently on the same material, come to the same conclusions, even approximately? The history of Systematic Botany would answer emphatically, *No*.

Let us consider another aspect of the problem, also tending to diversity of material and of opinion. It is not uncommon to find a Linneon with discontinuous distribution; it occurs in several areas which are more or less isolated from one another by natural barriers such as high mountain ranges. Analysis of such cases gives gradations which are not to be measured by any definite scale. Plants taken from the various areas may show no difference; they may differ slightly but perceptibly from the accepted standard and these may be accounted as geographical races; in other cases the outliers may be well-marked varieties or even sub-species; these last may have diverged so far that, in the estimate of some systematists, they would be regarded as distinct species. (The lines separating these categories are quite indefinite.) We are familiar with the usual accompaniments, not necessarily the results, of isolation in other fields of enquiry. Some of us claim to recognize a Yorkshireman or an Aberdonian by certain criteria. If America were isolated for some generations, would the contemporary Briton understand the language? Do we now? Isolation itself is not the cause of divergence but it gives the greater opportunity for it. In areas of great environmental diversity, broken up by various barriers into isolated sub-areas, it is usual to find a high degree of specific multiplication. Extensive plains without barriers have naturally a much more uniform flora, for the conditions are not favourable to segregation. Geographical isolation has a part to play in the production of these changes. When we have a Linneon with subordinate units in several more or less isolated areas, it is usual to assume that all have been derived from a common ancestor. The distribution at one time was no doubt continuous and the general constitution more or less homogenous. But when in course of time, from climatic or other reasons, the Linneon was represented by scattered colonies, these did not keep step in their subsequent evolution. Whatever be the cause or causes of evolutionary change, these colonies would begin to show minor deviations from the presumed normal. The process would be slow, but the tendency would almost always be to divergence. Given that the changes take place, the miracle would be if the groups pursued exactly the same course. Here, then, is another phase of the difficult problem of finding a definite scale of measurement. In many cases of discontinuous distribution the systematist makes his analysis in the expectation that some points of difference will come to light, but the assessment of the degree of difference is again a matter of his personal judgment.

When the material is so intricate, diversity of opinion cannot but prevail.

Another factor in our problem is the effect of what may be called in general evolutionary changes. In these is included hybridization, which has already been discussed. We enter here a much disputed field. We are, however, concerned not so much with the causes of these changes as with the results for classification. As long as species were regarded as special creations and therefore constant, there could be no reason for investigation. The earlier exponents of evolution, such as LAMARCK and DARWIN, had to proceed on somewhat general lines, for they had not before them the minute data made available by cytology and genetics. Later exponents, such as DE VRIES and LOTSY, made use of the new knowledge. All recognized the great variability which prevails in Nature; the root of the matter is the cause, or causes, of variation. The taxonomist has consequently to deal with a tangled skein of variations, some due to one cause and some to another. Inspection of his material may lead him to the conclusion that hybridization in the past has been the chief cause of multiplicity of species in the genus concerned and his exposition has to take that factor into account. In another case the influence of geographical isolation has to be assessed. But, apart from these factors, he will meet another, still more fundamental, one which has received very detailed study during recent years. He may come across variations which are to be attributed to gene mutations or to chromosome transformations—primary processes in the origin of species. It is true that in most cases these variations may be of such a minor nature that the taxonomist ignores them, for he endeavours to keep reasonably near to the Linneon and must leave the finer differences to the geneticist. But some "mutations" may be of such a comparatively major character as to attract the attention of even the most pronounced "lumper." No even scale is available for the measurement. They add, however, to the complexity of the Linneon which the systematist may continue to regard as a morphological unit, while in its fine analysis it is a group of individuals of very different genetical constitution.

We are presented here with a difficulty for which as yet there is no real solution. Are the taxonomist and the geneticist to pursue different paths? Must the taxonomist confine himself more or less to Linneons while the geneticist unravels their complexity? This easy division is not possible as a general working arrangement. The taxonomist analyses his genus by the help of broad morphological criteria and, provided he is not content with a bald demarcation of the species, attempts a synthesis outlining their possible development or at least their affinities and interrelationships. But into this field the study of cytology and genetics has brought an entirely different method of analysis and one which the taxonomist has to take into consideration. On his part the cyto-geneticist, if he essays a genus and its component species, must begin with the framework already constructed by the taxonomist, must make himself acquainted with

the work already done on the genus, and if he is wise will ensure that the material he is using is named in accordance with the taxonomic record—not always an easy task. Then his own particular analysis will be concerned with the nuclear minutiae—the number, size, configuration, genetical content, etc., of the chromosomes of each species. It is now well known that the data thus obtained may have a diagnostic value in the assessment of species and may throw light on their inter-relationships. The cyto-geneticist is therefore entitled to draw up his own synthesis and to give his own version of the content of the genus. In cases where this has been done and where the conclusions have been compared with those of the taxonomist, it has been found that in the main there is agreement. While such a result is in a measure a tribute to the validity of the ordinary morphological criteria, it is also evidence that the cytological data merit consideration in matters of classification. Complete agreement, however, is not to be expected and interest will centre on the points of disagreement. These are likely to be more numerous when an attempt is made to envisage the phylogeny of the genus concerned. The question at once arises as to the relative validity of the two sets of data. What weight must be given to the cyto-genetical data? In the first place the new analysis suffers from certain disabilities; the significance of the data for taxonomic work is still a subject for enquiry; the assemblage of necessary material for even *one* genus is no easy task; the results are based on the examination of very intricate minutiae; it is very easy to go astray in their interpretation; in some genera the results may be almost negative; as we have found elsewhere, the criteria serviceable for one genus may be quite inapplicable to another; there is every evidence that the problem is a highly complex one; the work entailed in such enquiries is far beyond that of ordinary morphological analysis; the field is so wide that the cyto-geneticists may well labour for many years before a reasonably complete series of data is available. Consequently for the present, in the major part of the field, taxonomic work must continue on the usual lines for lack of the other evidence. But where a genus has been investigated more or less completely from a cyto-genetical standpoint, it behoves the systematist to take that evidence into consideration; it will confirm no doubt many of his conclusions but will challenge others; it is still subordinate to the morphological evidence but is already a useful test for the conclusions based thereon. Obviously much can be done by the co-operation of systematist and cyto-geneticist; there would be the interplay of criticism. The double work could be done by one man, but life is very short.

We now ask whether all this will lead in the direction of final conclusions. Time alone will show, but the issue may well be of still greater complexity in the majority of cases. I need not stress further the many difficulties of interpretation which will occur in the cyto-genetical data. Genera and their component species will now be subject to a very much more minuté scrutiny. It is inevitable that

in some cases the current taxonomic expositions will not be in unison with the new data. In any event the structure which has been raised is far from secure. Let me take one example. In a genus of any size the species have not all been described and defined at the same time. As material came to hand, various botanists contributed their quota of species. The monographer brings the scattered items together. In his exposition he is in many respects bound by the definitions and circumscriptions of his predecessors. Were it possible for him to start afresh, the framework might be very different. With the field now reasonably complete for survey, he would in many instances choose his fixed points (species) somewhat otherwise than in the previous records—as more in keeping with the true state of affairs. But the claims are already staked out and the rules of priority give little licence for change. The type of any species is the one which came first to notice in the history of the genus, received a name and was described. But it need not be the true centre, neither morphologically nor from the geographical point of view, nor in accord with the cyto-genetical analysis. But the type is the type and the monographer cannot make drastic changes in nomenclature or in definition. It may well be, therefore, that the monographer's work in the future, supplemented by the finer analysis of the cyto-geneticist, cannot be brought within the framework of the existing nomenclature if a true synthesis is to be given. Must in some cases the bonds of priority be loosened? It is unlikely that the previous somewhat spasmodic description of species gives a correct representation. The rule of priority is useful and necessary but it imposes restrictions which may yet have to be broken through. The morphological systematist has accepted these in the past—no doubt wisely in the interests of stability of nomenclature and of a measure of unanimity. It remains to be seen whether the results of the finer analysis can be expressed within the same confines.

There is one other element in the complexity of the material which deserves a passing mention. The spread of mankind over the earth has naturally led to a great extension of the cultivated area, and so has brought about a measure of instability in the flora of the areas concerned. Regions untouched by man give in general the impression of a quasi-permanent type of vegetation and offer few chances to invaders. There is not the same opportunity for change. It would appear that evolutionary modifications are not so likely to occur. As a rule evidence of active hybridization is absent. On the other hand, in areas dominated by man's cultivation, the facies of the flora is much less fixed. Drastic changes have taken place in the environmental conditions. The soil is altered; there may be variations in rainfall and in water-supply; plants migrate into the new territory; man brings in his own introductions; the struggle for survival is renewed. So too in gardens; plants of other climes are brought to a new environment; the systematist may cultivate the species in which he has concern; these ought to prove of greater service in his

problems than herbarium material. In most cases the cultivated plant will no doubt keep true in form. But the work of the horticulturist is evidence enough of how in due course mutations appear and of how selection may add forms and varieties different morphologically from the original species. Even in the first appearance of the plant in cultivation the habit may be so much altered that the unwary systematist describes it as a new species.

From the outline I have endeavoured to give, it will be seen that there are many difficulties in the path of the taxonomist. His search is for a natural system which will be in accord with the evolutionary history in so far as that is known or can be postulated. An artificial system with no other purpose than nomenclature and service for identification is less complicated in the making and easier to apply, but it does not satisfy, for, apart from its immediate utility, it leads nowhere and is devoid of interest. "But what is science but the attempt to arrange in a series of generalizations the facts of what we are vain enough to call the known world. To know the resemblances of things is even more important than to know the differences of things." \* Classification is a summary of the position as we now know it, and the alternative is a series of pigeon-holes. Data and still more data accumulate as the result of finer analysis. One cannot yet conclude that the outlook is any clearer. But classification cannot be regarded as a stultifying study for it has greatly extended its horizons. Whatever may be the outcome for taxonomy of cytogenetical research, it has come as a revivifying influence.

In the construction of a natural system we endeavour to take community of descent as the basis and as the explanation of certain resemblances between one organism and another. But we have to deal in great part with only the present-day expression of the facts. We have as yet to assume the past connexions. In dealing with species within a genus the bonds of relationship are usually obvious. In dealing with genera within a family—farther back in history—the evidence is less obvious, but we are satisfied that the arrangement is justified from the phyletic point of view. If we try to trace the interrelationships between families we are going still further back, and the evidence is much less trustworthy. To trace the ancestry of many of them is an adventure into the realm of speculation. Each traveller brings back a different tale. Nevertheless taxonomists are satisfied that much of the framework is set on solid ground and does represent phyletic bonds. In many cases we may have to represent certain associations as more or less isolated ; we can draw a ring round them separating them from all else ; but we can affirm that what is within the ring is closely connected. Some of the members may not conform to the criteria by which the group is judged, but in spite of deviations we are certain that they are rightly included. To prove community of descent is another matter. We would need the previous history

\* LYND, "Y.Y.," p. 104.



in full if we must verify. But the geological record of the Flowering Plants is meagre in the extreme. We have nothing of real value throwing light on the origin of either families or genera. What we know of the origin of species is based almost entirely on current material. As we have seen, we can peer sometimes into the history of a genus and note that hybridization in the past has had much to do with the multiplicity of its present-day species. But we can only speculate as to the parental units which began the process. Cytogenetical investigation deals with the present; here too we can obtain glimpses of how certain species may have arisen and we may even postulate the possible origin of genera but as yet we have not the means of reading even the immediate past. The same game can be played, and has been played, with the morphological data. But it is perhaps too early as yet to assess the possibilities of the cytological method, for surprises may be in store.

However, as far as the evidence goes, it is generally accepted that the natural system represents a fair measure of phyletic continuity. We assume that certain resemblances between one organism and another indicate this phyletic affinity. Resemblance is a term of wide application. By what criteria are we to judge these resemblances? There are many instances of close similarity in organic beings where community of descent cannot be regarded as having any influence whatever. In both the zoological and the botanical fields many obvious resemblances are no indication of affinity. The whale and the seal are mammals, not fish. Among plants some Monocotyledons have a strong resemblance to certain Dicotyledons; there is often a striking similarity in facies among desert plants of different families; the vegetative parts of many aquatics are confusingly alike; many climbing plants show morphological parallelisms; all insectivorous plants are not near relations; heterotrophic flowering plants are assigned to quite distinct families, not to one. Such resemblances as these have long been set aside as implying no necessary relationship. The reproductive parts in plants have been the chief guide for the systematist. But in the major criteria derived from flower-structure there are many resemblances and parallel developments which afford no phyletic clue. All families with an apocarpic gynaecium are not necessarily allied; epigynous flowers occur in several quite distinct phyla of flowering plants; many of the characters shown by the Dicotyledonous flower appear also in the Monocotyledons.

In so far as vegetative features are concerned—the features which are the first to invite comparison for resemblances—for long it has been understood that these are of secondary importance for systematic purposes. But even in the flower-characters it is very difficult to find criteria which can be used absolutely. It is not going too far to say that the great proportion of resemblances are of no phyletic importance whatever. We must look elsewhere for an explanation of these similarities. Certain types of structure as we have seen are associated with certain environmental conditions or it may be with

certain modes of nutrition. However the evolutionary changes have been brought about we find that organisms are more or less attuned to one environment or another. Frequently we are able to presume the usual habitat of a plant from its general morphological features. Plants of quite distinct families end in possessing a general resemblance. They have responded somehow or other to the environmental factors, or alternatively, the latter have permitted progression and change only in certain definite directions. We may account thus for some similarities.

Other evolutionary trends are known which induce a degree of similarity which is not of phyletic concern. We do not assume that all seed-plants are from the same stock ; epigyny is a trend in many unrelated phyla ; all gamopetalous flowers are not connected together in a phyletic association apart from other flowering plants. There are obviously certain general trends in plant evolution which induce resemblance in form but do not imply relationship. Whatever the impulse independent groups in this evolution were travelling along the same path.

There is then a wide gap between the real affinity of organisms and their adaptations to conditions of life. In classification it is evident that many resemblances have to be ruled out as of no importance phyletically. What are then the fundamental criteria ? Homoplastic characters must be avoided ; homogenetic characters must be sought out. The criteria are there but, as we have seen in the past discussion, they are of shifting values. Yet they supply the necessary evidence to be weighed with care and with judgment. It is not possible to lay down a strict sequence of rules but many of the conclusions are valid beyond a doubt. Various natural affinities were recognized early in the history of classification. These were steadily added to by succeeding systematists. Each in his turn endeavoured to combine the results into a phyletic scheme. They had to formulate rules from the criteria which appealed to them. But in practice they all broke the rules whenever a strict interpretation would have caused them to run counter to their appreciation of affinity. If some measure of solid fact has been secured, what has been the road to it ? According to the historian SACHS\* : " the success which was really obtained in the determination of affinities was due chiefly to a correctness of feeling, formed and continually being perfected by constant consideration of the forms of plants." Biologists may not always allow this faculty in a systematist, but let us rather ask what has been the result. Systematists like other men are prone to diversity of opinion. Yet throughout the living world the broad outlines of a natural system have been established and *pro maxima parte* are accepted as valid to such an extent that they are no longer a matter of debate. This system is based almost entirely on interpretation of the present, for in spite of the untiring labours of the palæontologist there is as yet

\* SACHS, Hist. Bot., p. 151.

too fragmentary a record of the past. Nevertheless, although the past history is shadowy, systematists claim that the relative coherence of their synthesis can be explained only by community of descent. But while the classification itself may not be challenged in so far as its main features are concerned, objection has been raised to its acceptance as a phyletic system.

The position was very fully and ably discussed by the late Dr. F. A. BATHER, the eminent palæontologist, in his Presidential Address to the Geological Society in 1927.\* In this address the history of classification is reviewed as well as the merits and demerits of various systems. His conclusions are adverse to the acceptance of the Natural System as being at the same time phylogenetic. Thus, p. lxiii: "The intimate analysis of large series of fossils collected with anxious precision from successive feet, or even inches, of stratified rock is surely a research which should illuminate the course and method of evolution, that should clarify our views as to the nature of species—the elements of our classification—and that should make manifest the affinities of genera and larger groups. All these things no doubt it does, but a further result is to disturb our confidence in the concepts with which we have worked so long and to make us wonder whether any system at all can be based on the Theory of Descent." And again, p. ci: "The whole of our System, from the great Phyla to the very unit cells, is riddled through and through with polyphyly and convergence." What do these terms imply? In the Natural System the framework has been likened to a great tree with numerous branches and branchlets. Lack of knowledge of the past makes all the main limbs and branches more or less hypothetical and almost all we know are the ultimate fine branchlets which represent the organisms of the present day. It is assumed, however, that if we had the whole story, the course of evolution could be figured after the fashion of a genealogical tree. But are we correct in taking the tree and its branches as a fair analogy of the real happenings? Once a branch is set off it does not coincide again with another branch. By this analogy we are assuming that a family—or a genus—or a species, once emitted from the parent branch, continues its individual course and is never reabsorbed into another and kindred group. May a present-day family not have come from the convergence of what in the past must be regarded as two distinct families? Is it not possible that a genus of to-day is the outcome of two previous genera which in their subsequent evolution have so approached one another that they are assessed as but one? Are we sure that a species in its genesis was confined to one definite area? Have the evolutionary trends so influenced the record by the production of similarities—or even identities—that the phyletic story is completely disturbed and the strands intertangled? Dr. BATHER's deductions are based naturally on the fossil record which, though imperfect, is much more ample for animals than for flowering

\* Quarterly Journ. Geol. Soc. London, vol. lxxxiii. Biological Classification: Past and Future.

plants where, as has been already indicated, it is much too exiguous for comparison or for a connected story. It is not in my power to pass in review the geological evidence for various animals as cited by Dr. BATHER. The majority of them are quite outside my comprehension. But I quote (p. xci) what is said of *Equus*—the horse: "Of late years however many well-established genera have been claimed as polygenetic. . . . The most remarkable, if not the best established, example is presented by *Equus*. Abel maintains that forms which would on grounds of structure be referred to this genus arose twice as the final stages of two distinct lines of descent: the one in Europe from *Hipparion*, the other in North America from *Protohippus* by way of *Pliohippus*. He has therefore distinguished the North American horse as *Neohippus*." And again (p. xciv): "*Equus (sensu lato)* is polyphyletic because (*teste* Abel) it is derived from two long-separated generic stocks." According to the interpretation of the geological evidence, this concurrence of branches has occurred again and again. If this interpretation is correct, then the course of events can scarcely be represented in the usual fashion of a genealogical tree with ever divergent branches.

To what extent then must weight be given to this factor of convergence? It must be stated in the first place that all zoologists do not attribute to it so important a rôle as is claimed by Dr. BATHER. An exceedingly interesting review of the position was given this year by Dr. W. T. CALMAN in his Presidential Address to the Linnean Society of London on the meaning of Biological Classification. A summary of this is to be found in *Nature* for July 6, 1935. The complete address is given in *Proceedings Linn. Soc. Lond.*, published on October 10, 1935. In this paper will be found an able defence of the existing system of classification on the zoological side. Notwithstanding the importance of parallel evolution and of convergence, it is not admitted that thereby the Natural System is vitiated. It is not for me to try to marshal his evidence but you will find there beautiful examples of "convergence" without the undermining of the determining factors of lineage. See his remarks (p. 151) on the Old World and New World Monkeys, and also (p. 154) on the Malacostrata. Here is one of his conclusions: "I suggest, therefore, that the results of taxonomic research are, in their broad outlines, entirely inconsistent with the view that convergent evolution has been the rule rather than the exception in the phylogeny of animals and plants."

What is the position as regards the Flowering Plants? We have little but the present-day record and so our data are not so extensive in time as the zoological. It can be readily admitted that there are very numerous examples of parallel evolution and of a degree of convergence. Homoplastic development is almost a botanical commonplace. These similarities may tend often to obscure the true position, but as a rule the systematic position of a plant is readily determined and frequently runs counter to its placement judged on mere resemblances. The categories of classification cut across the categories of

adaptation and those of environment as pointed out long ago by Darwin. Admitted also that we have sometimes marked discontinuity in the distribution of genera and species, usually their discontinuity can be accounted for otherwise than by assuming independent origins. It may be tempting to explain difficult cases by such a supposition, but seldom do botanical systematists yield to the temptation. In a very restricted sense a species may be held to originate in two distinct areas. If we take the example of a Linneon with its Jordanons situated in two isolated areas, it is always possible with interbreeding Jordanons for a similar combination to arise in the two areas. But such a case is of too little moment in our argument and unlikely to yield in course of time two groups of specific rank retaining exactly the same characteristics. But it may well happen that a genus as defined may be polyphyletic, especially in a family where the generic criteria are somewhat arbitrary or mechanical (Compositae, Cruciferae, Umbelliferae). The component species may be in mechanical juxtaposition but that does not prove complete convergence but rather a weakness in the criteria.

While it is impossible to prove that the general scheme is not in any way vitiated by convergence and polyphyly, it would be difficult to persuade the majority of systematists that the present classification of Flowering Plants needs readjustment on that score. The necessary data are not yet in view. There are certain general arguments which seem to me to favour the *status quo* :—

(1) In evolution there has been a premium on divergence. We assume at the beginning of life on the earth simplicity of structure. We see at the present day a large multiplicity of organisms. The tendency has been ever to differences. If convergence was a very forceful factor, there would have been no development on the scale which has taken place.

(2) Modern research has revealed the high degree of complexity in the chromosomic constitution of species and of genera. It is one thing to obtain a high degree of convergence in the morphological characters of two separate units (species or genera) : it is quite another matter to assume that such convergence will bring about a degree of genetic equivalence.

(3) The general coherence of the systematic framework is beyond dispute.

(4) Convergences of any phyletic moment must have been between closely allied organisms and therefore unlikely to affect the broad genealogical story.

(5) Where so little is as yet available of the past record, its interpretation must be very difficult and highly speculative.

(6) To some extent the argument is one of the meaning of terms. If the ancestors of a genus are known and if these are regarded as distinct genera, we have a polyphyletic genus ; if the ancestral complex is taken as one genus, the present-day resultant is monophyletic. We are back again at the problem of the status of genera and the

easy production of intergeneric hybrids if subdivision is carried far enough.

I must now conclude. It is evident that there is no easy path to agreement in matters of classification and nomenclature and we must be reconciled to great divergence of opinion. In Nature there appears to be a premium on divergence. The farther research proceeds, the more complex the ultimate problems. Increasing division of opinion may after all be an evolutionary trend! As the present-day world of man is reproached with a tendency to standardization, there may be something consoling in the view that diversity of opinion increases, for diversity has been the path of progress—the path along which the living world has been built up.

## PLANTS TO WHICH AWARDS HAVE BEEN MADE IN 1935-6.

**Chrysanthemum 'Yellow American Beauty.'** A.M. January 14, 1936. From Mr. T. Stevenson, Hillingdon. A sulphur-yellow incurved variety of medium size. It is a sport from 'American Beauty.'

**\*Gladiolus 'Demuth.'** H.C. August 9, 1935. Raised by Messrs. L. Frietsch and sent by Messrs. K. Velthuys, Hillegom, Holland. A *Primulinus grandiflorus* variety.  $4\frac{1}{2}$  feet, branched, with 16 to 18 closely set flowers, 4 or 5 out at a time; flowers 4 inches diameter, slightly hooded, soft rosy-lilac, middle of lower petals buff lined carmine.

**\*Gladiolus 'Edelfrau.'** H.C. August 21, 1935. Raised by Mr. Hugo Graetz and sent by Messrs. K. Velthuys, Hillegom, Holland. A large-flowered variety.  $4\frac{1}{2}$  feet, branched, with 16 to 20 closely set flowers, 5 out at a time; flowers  $4\frac{1}{4}$  inches diameter, clear pale sulphur self.

**\*Gladiolus 'George Hart.'** H.C. July 22, 1935. Raised and sent by Messrs. W. J. Unwin, Histon. A *Primulinus grandiflorus* variety. 4 feet, unbranched, with 18 closely set flowers, 4 or 5 out at a time; flowers 4 inches diameter, soft pinkish-buff, lower petals lined and feathered with crimson.

**\*Gladiolus 'Golden Gem.'** A.M. July 22, 1935. Raised and sent by Messrs. W. J. Unwin, Histon. A *Primulinus grandiflorus* variety.  $3\frac{1}{2}$  feet, branched, with 12 to 16 closely set flowers, 4 or 5 out at a time; flowers 4 inches diameter, bright deep golden-yellow, lower petals lined crimson-carmine.

**\*Gladiolus 'Goldie.'** A.M. July 22, 1935. Raised and sent by Messrs. W. J. Unwin, Histon. A *Primulinus* variety.  $3\frac{1}{2}$  feet, branched, with 18 closely set flowers, 5 out at a time; flowers hooded, 3 inches diameter, bright orange-red, lower petal lemon-yellow.

**\*Gladiolus 'Goldlack.'** H.C. August 9, 1935. Raised by Messrs. Pfitzer and sent by Messrs. Konynenburg & Mark, Noordwyk, Holland. A large-flowered variety. 4 feet, branched, with 12 to 14 closely set flowers, 4 or 5 out at a time; flowers  $4\frac{1}{4}$  inches diameter, rich golden-orange, middle of lower petals primrose.

**\*Gladiolus 'Histon Triumph.'** A.M. August 9, 1935. Raised and sent by Messrs. W. J. Unwin, Histon. A large-flowered variety.  $4\frac{1}{2}$  feet, branched, with 16 to 18 flowers, 5 out at a time; flowers 5 inches diameter, rich orange-scarlet, lower petals blotched deep crimson on white ground.

**\*Gladiolus 'Ivory Farey.'** H.C. July 22, 1935. Raised and sent by Messrs. W. J. Unwin, Histon. A *Primulinus grandiflorus* variety. 4 feet, unbranched, with 12 to 14 closely set flowers, 4 or 5 out at a

time ; flowers  $4\frac{1}{4}$  inches diameter, ivory-white, lower petals cream speckled with carmine.

\**Gladiolus* 'Maréchal Niel.' H.C. July 22, 1935. Raised and sent by Messrs. W. J. Unwin, Histon. A *Primulinus grandiflorus* variety.  $4\frac{1}{2}$  feet, branched, with 14 to 18 flowers, 3 to 5 out at a time ; flowers  $4\frac{1}{2}$  inches diameter, pale cream, lower petals of a deeper shade.

\**Gladiolus* 'Mary Barrett.' H.C. July 22, 1935. Raised and sent by Messrs. W. J. Unwin, Histon. A *Primulinus* variety. 4 feet, unbranched, with 14 flowers, 3 or 4 out at a time ; flowers hooded,  $3\frac{1}{2}$  inches diameter, pale cream, lower petals lemon lined carmine.

\**Gladiolus* 'Mrs. Jas. Dear.' H.C. July 22, 1935. Raised and sent by Messrs. W. J. Unwin, Histon. A *Primulinus grandiflorus* variety. 3 feet, branched, with 12 to 16 closely set flowers, 3 or 4 out at a time ; flowers 4 inches diameter, bright rich salmon-orange, lower petals blotched crimson at middle.

\**Gladiolus* 'Oeganda.' A.M. August 9, 1935. Raised by Messrs. Pfitzer and sent by Messrs. Konynenburg & Mark, Noordwyk, Holland. A large-flowered variety.  $3\frac{3}{4}$  feet, branched, with 12 to 14 closely set flowers, 4 or 5 out at a time ; flowers 4 inches diameter, deep rich velvety maroon self.

\**Gladiolus* 'Open Heart.' A.M. July 22, 1935. Raised and sent by Messrs. W. J. Unwin, Histon. A *Primulinus grandiflorus* variety.  $3\frac{1}{4}$  feet, branched, with 14 to 16 very closely set flowers, 4 or 5 out at a time ; flowers 4 inches diameter, soft creamy-pink, lower petals speckled and lined scarlet-carmine.

\**Gladiolus* 'Patricia Unwin.' H.C. July 22, 1935. Raised and sent by Messrs. W. J. Unwin, Histon. *Primulinus grandiflorus*. 4 feet, unbranched, with 12 to 14 closely set flowers ; flowers  $3\frac{1}{4}$  inches diameter, rich peachy apricot shaded light orange, middle of lower petals deep cream.

\**Gladiolus* 'P. D. van Mourik.' A.M. August 9, 1935. Raised and sent by Messrs. K. Velthuys, Hillegom, Holland. Large flowered.  $4\frac{3}{4}$  feet, branched, with 16 to 18 flowers, 5 out at a time ; flowers 5 inches diameter, soft pale rose-pink, lower petals blotched deep crimson.

\**Gladiolus* 'Sonatina.' H.C. August 9, 1935. Sent by Messrs. R. A. Morris, Birmingham. Large flowered. 6 feet, branched, with 20 closely set flowers, 4 out at a time ; flowers  $5\frac{1}{2}$  to 6 inches diameter, soft rose-pink, lower petals speckled magenta on white.

\**Gladiolus* 'Tess.' A.M. July 22, 1935. Raised and sent by Messrs. W. J. Unwin, Histon. *Primulinus grandiflorus*.  $3\frac{1}{2}$  feet, unbranched, with 12 to 14 very closely set flowers, 4 out at a time ; flowers  $3\frac{3}{4}$  inches diameter, soft creamy salmon-pink, middle of lower petals apricot.

\**Gladiolus* 'William Copeland.' H.C. July 22, 1935. Raised and sent by Messrs. W. J. Unwin, Histon. *Primulinus grandiflorus*.



4½ feet, unbranched, with 16 to 18 flowers, 4 or 5 out at a time ; flowers hooded, 4 inches diameter, bright pale lavender-violet, middle of lower petals cream.

*Odontioda* × 'Apoda,' Exbury var. A.M. January 14, 1936. Shown by Lionel de Rothschild, Esq., Exbury. A charming hybrid obtained by crossing *Odontioda* × 'Ganesa' with *Odontoglossum crispum*. The arching spike bore 14 well-formed rosy-mauve flowers of large size, the sepals and petals with red-brown markings on the central areas.

\**Verbena aubletia*. H.C. July 22, 1935. Sent by Messrs. W. H. Simpson of Birmingham. Plant 18 inches tall, spreading. Flowers ½ inch diameter, light rosy-magenta ; free and early flowering on erect stems.

\**Verbena* 'Cameo Pink.' A.M. August 9, 1935. Raised and sent by Messrs. Bodger Seeds, El Monte, California, U.S.A. Plant 6 inches high, habit compact and prostrate. Flowers  $\frac{1}{10}$  inch diameter, soft blush-pink. An even stock.

\**Verbena* 'Etna.' A.M. August 9, 1935. Raised and sent by Messrs. Waller-Franklin Seed Co., Guadalupe, California, U.S.A. Plant 1 foot tall, of spreading habit. Flowers ¾ inch diameter, rich scarlet ; eye small, creamy-white. A good even stock.

\**Verbena* 'Giant Salmon Pink.' A.M. July 22, 1935. Raised and sent by Messrs. Waller-Franklin Seed Co., Guadalupe, California, U.S.A. Plant 14 inches tall, spreading. Flowers ⅝ inch diameter, rich rosy-salmon with a small creamy-white eye. A good even stock.

\**Verbena* 'Royale.' H.C. August 9, 1935. Raised by Messrs. Waller-Franklin Seed Co., and sent by Messrs. Watkins & Simpson, Covent Garden, W.C. Plant 1 foot tall, of spreading habit. Flowers ¾ inch diameter, deep violet-purple with large creamy-white eye. A good even stock.

\**Verbena* 'Spectrum Red.' A.M. August 9, 1935. Raised and sent by Messrs. Waller-Franklin Seed Co., Guadalupe, California, U.S.A. Plant 12 inches high ; habit spreading. Flowers ¾ inch diameter, brilliant scarlet. An even stock.

\**Verbena venosa*. A.M. August 9, 1935. Sent by Messrs. Bodger Seeds, El Monte, California, U.S.A. Plant 11 inches tall ; of erect spreading habit. Flowers ¼ inch diameter, deep rosy-lilac.

\**Verbena* 'Violet Bouquet.' H.C. August 9, 1935. Raised and sent by Messrs. Waller-Franklin Seed Co., Guadalupe, California, U.S.A. Plant 12 inches tall, of erect, compact habit. Flowers ¾ inch diameter, bright reddish-violet ; eye creamy-white.

*Vuylstekeara* × 'Cambria,' Cannizaro var. A.M. January 14, 1936. Shown by E. Kenneth Wilson, Esq., Cannizaro, Wimbledon. This distinct hybrid was obtained by crossing *Vuylstekeara* × 'Rudra' with *Odontoglossum* × 'Clonius.' The erect spike bore five flowers of deep crimson red, the wide labellum lighter.

## THE AWARD OF GARDEN MERIT.—XXXI.\*

By F. J. CHITTENDEN, F.L.S., V.M.H.

196. *HYPERICUM FRAGILE*.*Award of Garden Merit, September 29, 1930.*

*Hypericum fragile* grows in fissures of rocks on Mt. Dirphys in Euboea, and, like so many Grecian plants, it likes a place in the sun. It appears to be somewhat uncommon in its native home, where it occurs at an altitude of about 1,600 feet. A sunny, well-drained spot on the rock garden is therefore indicated, and as its habit is to form growths that rise little above the surrounding rock, a place where it can spread these slender leafy stems suits it best. The 4- or 5-inch stems arise in numbers from the apex of a woody rootstock and bear small greyish-green ovate leaves apparently in two ranks as the stems lie on the rock, but really in four. The pale golden flowers without trace of red, of ample size, are at the ends of the stems in three- to many-flowered groups, and appear in July or August.

Although *H. fragile* has been known for eighty years or so, there appears to be no good figure of it, and so distinct is it that there has been no confusion of names.

197. *PHILADELPHUS VIRGINAL*.*Award of Garden Merit, July 5, 1926.*

When M. LEMOINE of Nancy crossed *Philadelphus coronarius* of South and South-east Europe with the very distinct *P. microphyllus* of Colorado, New Mexico and Arizona, he started a race of shrubs of outstanding value in the garden. The progeny of this cross, crossed possibly with other species, varies greatly and many named forms have been put on the market. They can all be propagated quite easily from cuttings of soft wood taken in June and rooted in sand with bottom heat, and they can also be rooted, though less surely, from half-ripe wood. Both the parents are scented, *P. microphyllus* having a pleasant pineapple odour, but both are better outdoors than indoors. Their descendants inherit the scent in varying degrees, but Virginal has not such an overpowering perfume as *P. coronarius* itself. It is, like its parents, perfectly hardy, grows to 6 feet or so in height, but less if kept properly pruned, flowers profusely in June

\* The notes on the first hundred plants to receive the Award of Garden Merit have been collected from our JOURNAL, vols. 47 to 53, and published as a pamphlet, price 1s. For subsequent notes see vol. 54, pp. 218 and 423; 55, pp. 121 and 276; 56, pp. 80 and 245; 57, pp. 65 and 354; 58, pp. 171 and 400; 59, pp. 131, 308, 360, 406 and 449; 60, pp. 89 and 545; and 61, p. 94.

and has perfectly white, semi-double flowers in racemes of five to seven and about  $1\frac{1}{2}$  to 2 inches across. So good is it that it received the unusual award of F.C.C. when shown by Sir TREVOR LAWRENCE in June 1911.

The principal point in the growing of the Mock-Oranges is the pruning. They succeed in any good garden soil, but need pruning in the same way as Black Currants. With his usual clarity and economy of words, Mr. BEAN, in his *Trees and Shrubs Hardy in the British Isles*, gives the necessary directions: "They flower on short lateral twigs which spring from the shoots made the previous year, so that whatever pruning has to be done should consist of taking out old branches that have flowered, and leaving the long vigorous shoots of the current year to provide the succeeding crop of blossom. No mere shortening back should be done unless from considerations of space."

Plant *Philadelphus Virginal* and, treated like this, it will give the greatest possible pleasure each recurring summer.

## GARDEN NOTES.

*Lallemantia canescens*.—This representative of a small genus of the order Labiatae is not new to cultivation, but has recently been brought more prominently to notice by plants raised from seed collected by BALL in Asia Minor.

*L.c anescens* was figured by SWEET in 1823, in the first volume of the British Flower Garden, t. 38, from a plant grown in the nursery of Mr. COLVILL. It is, however, still not common in cultivation. The illustration given by SWEET bears the name *Dracocephalum canescens*. The plant is now transferred to the closely allied genus *Lallemantia*, which differs chiefly in the lobes of the corolla.

The figure given by SWEET shows only a single branch, but a well-grown plant is attractive, attaining a height of about 18 inches with a rather spreading habit (fig. 21). The stems bear greyish, hairy foliage, and the almost sessile flowers occur in whorls of usually six light blue flowers. These are borne on the upper portion of the stems, and the plant continues to flower during July and August. It is usually stated to be of an annual or biennial character, but at Wisley the plant gives every indication of being perennial in habit. A dryish, sunny border appears to be the position best suited to it under cultivation, as under these conditions it thrives admirably. The four species constituting the genus are all natives of Asia Minor and Persia, with the exception of *L. Royleana*, which extends into the Himalaya.—R. L. Harrow.

*Nierembergia hippomanica*.—During the past year frequent references have been made to *Nierembergia hippomanica* in the Royal Horticultural Society's lectures and in articles in the JOURNAL. A large group of the plant was shown at the Chelsea Show, and throughout the whole season up to and including the Autumn Show at Olympia this plant has been appearing on the exhibits of one or another nurseryman. This speaks well for the length of its flowering season, and it has been found that, even in a dry summer when flowers are fugitive, the season of *N. hippomanica* which commenced in late May, ceased only when the October frosts cut down most vegetation. Other plants in cold frames remained in occasional flower until mid-November. There can be no doubt that a plant with such characteristics is worthy of cultivation in gardens of every size. In small gardens it will be found most useful for providing a wealth of flower whilst occupying but a small space, whilst in Hyde Park it has been used with success as a bedding plant. On the rock garden near the greenhouses at Wisley a large patch (fig. 22) excited admiration and attention throughout the whole summer.

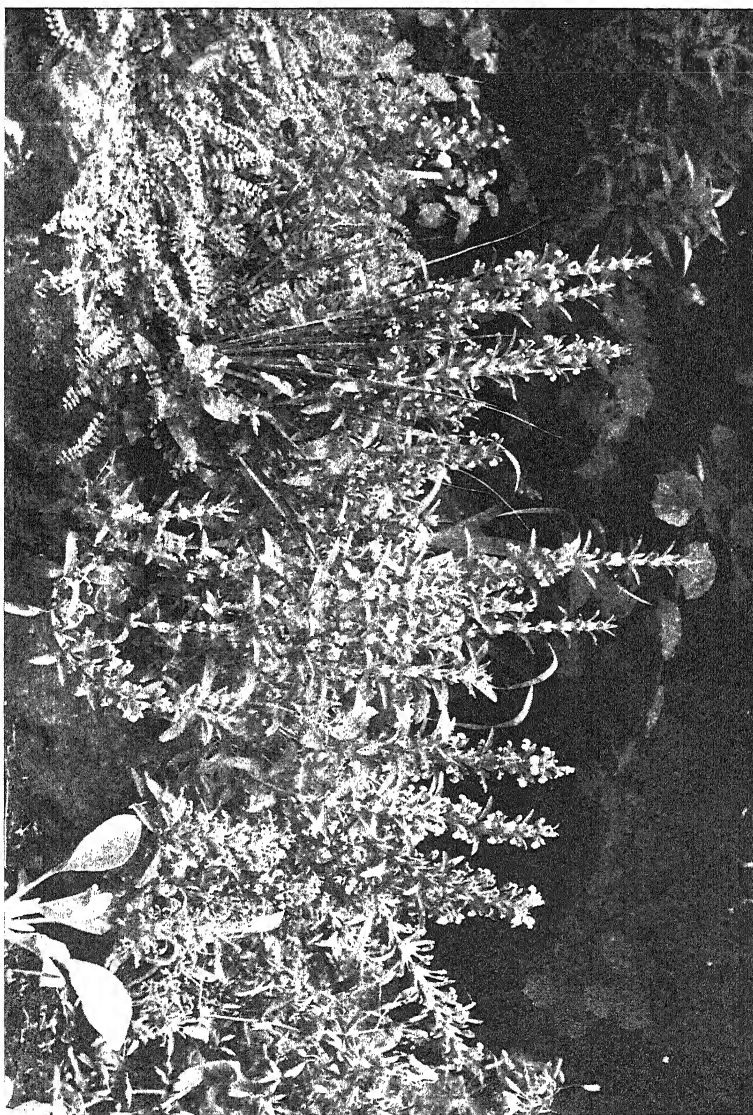


FIG. 21.—*LALEMANTIA CANESCENS*.

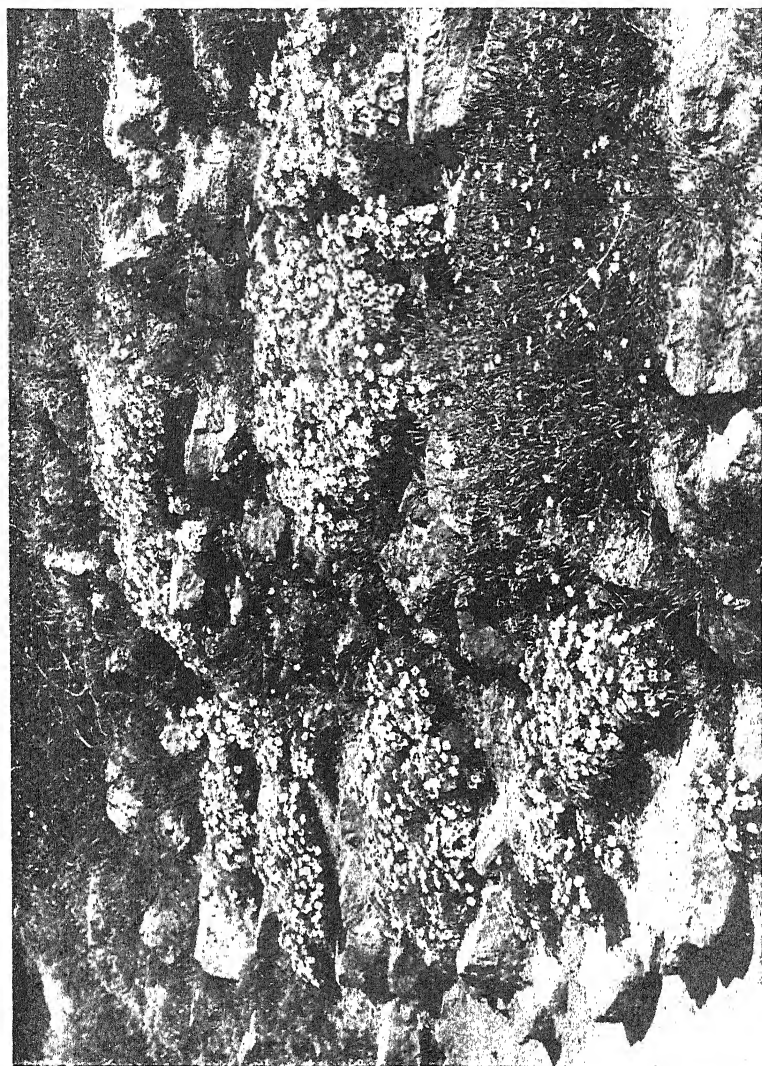


FIG. 22.—*NIEREMBERGIA HIPPOMANICA* AT WISLEY.



FIG. 23.—AN IRIS BORDER AT WISLEY.

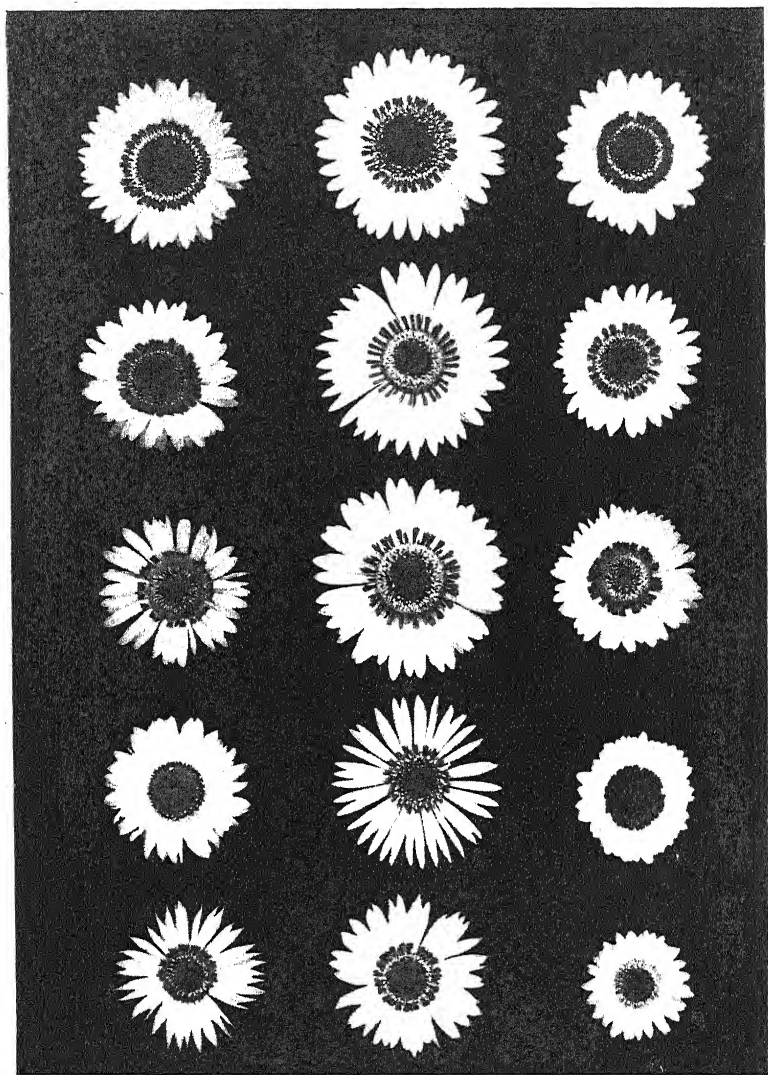


FIG. 24.—VENIDIUM  $\times$  ARCTOTIS. FLOWERS OF 2ND GENERATION.

[To face p. 141.



*N. hippomanica* is herbaceous and perennial. In ordinary winters in a well-drained soil it will be found hardy, and, if necessary, cuttings may be taken in late summer to provide more plants for the following year. In habit it resembles a Flax, but the stems are but 6 inches high and carry large heads of blue, saucer-shaped flowers about an inch across. The depth of blue varies in seed-raised plants from lavender-blue to purple. The plant is a native of the Argentine.—S. Boothman.

*Arctotis*  $\times$  *Venidium*?—In 1934 a seedling from *Venidium fastuosum*, growing at Wisley, gave flowers of a totally different colour

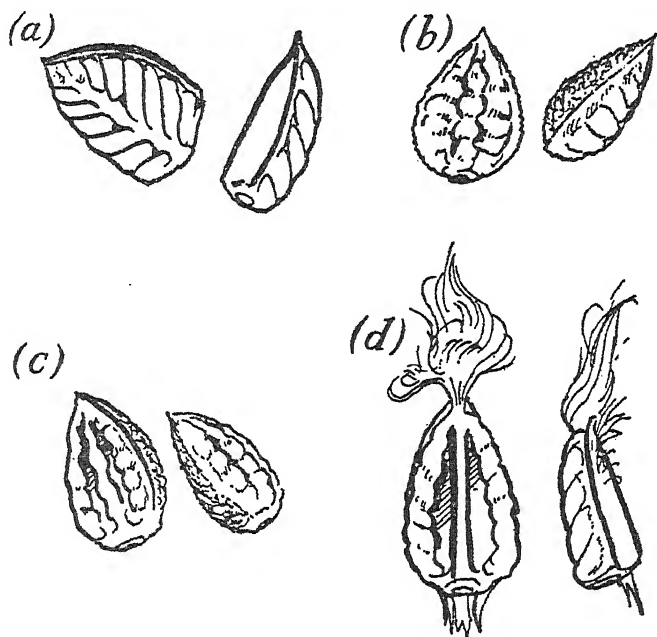


FIG. 25.—“SEEDS” FROM (a) ARCTOTIS TYPE OF SEEDLING; (b) *Venidium fastuosum*; (c) VENIDIUM TYPE OF SEEDLING; (d) *Arctotis grandis*.

from those of the type. They were pale creamy white, in some lights with a slightly bluish tinge, and had a ring of black bars around the disc, looking much like the middle flower in the second row in fig. 24 (all the flowers in this figure are much reduced). The habit of the plant was like that of *Venidium*, the stems being stiff and the flower held up to the sun. The seed of this stock had been saved at Wisley through several generations, the originals being those grown in the trial of *Arctotis* and allied plants in 1930. Part only of the seed saved in 1933 from which this plant was derived was sown in 1934, the other half being sown in 1935 when a similar plant was found among the seedlings.

Mr. BLAKEY saved the seed of the stranger in 1934 separately and this seed was sown in 1935 and gave a great range of plants, some orange like *V. fastuosum*, but the majority white, cream, white tinged blue, lemon, and primrose, all with a more or less pronounced black ring and varying greatly in size and to some extent in the relative length of the rays and the diameter of the disc. Figure 24 shows the range of form and markings. The habit of the plants also showed much variety, some approaching *V. fastuosum*, some *Arctotis grandis*.

It is of course not certain, but it is probable, that crossing occurred probably in 1933, possibly before, with a species of *Arctotis*, a genus which is very closely related to *Venidium*. *V. fastuosum* was in fact originally described and figured by JACQUIN as *Arctotis fastuosa*. The main characters relied upon to distinguish the two genera lie in the "seed," that of *Arctotis* having more or less hair upon it, but there are intermediate species, and the distinction is probably not sufficiently basic. Figure 25 shows the "seeds" of *Venidium fastuosum*, *Arctotis grandis*, and the presumed hybrid.

Apparently similar races of plants have occurred elsewhere, and as a result of these chance crossings and the selection of seedlings that will follow we shall doubtless have a new race of annuals, many members of which will give flowers of charming colours for our borders.

## BOOK REVIEWS.

"Tropical Planting and Gardening: with special reference to Ceylon." By H. F. Macmillan. Ed. 4. 8vo. 560 pp. (Macmillan, 1935.) 25s.

We are glad to be able to record the publication of a revised edition of this most helpful book on tropical gardening by one who has actually done the work of which it treats so well.

We noticed the first edition when it appeared some years ago, and now that it is revised and brought up to date are confident that it will continue to hold the high place into which it immediately stepped on its first appearance. Crops and garden plants of all sorts suitable for tropical conditions are dealt with, and there are excellent chapters on soil treatment, manures, and the like.

"Early Vegetables under Glass." By J. S. Dakers. 8vo. viii + 171 pp. (Cassell, London, 1936.) 2s. 6d.

A very useful book, simply written and dealing with vegetable growing in frames, greenhouses, and by the aid of cloches of various types. In addition, directions for the cultivation of Mushrooms indoors and out, and of Asparagus outdoors, are included. One could wish that the desirability of planting male Asparagus had been pointed out, for, as readers of this JOURNAL know, the yield is much greater from these than from female plants.

The directions given are for the most part clear, and the illustrations help materially.

"The ABC of Gardening." By W. E. Shewell-Cooper. 8vo. 320 pp. English Universities Press, London, 1935.) 5s.

On the whole, this is a book that can be recommended to the beginner with some certainty that it will meet his needs. The growing of vegetables in the ordinary garden is plainly dealt with, and so, too, is fruit growing in the open. (Why is not the 'Victoria' type of Black Currant mentioned? It is probably the best for general use. Or the excellent 'Red Cross' Raspberry?) Pages 181 to 258 are devoted to the flower garden, and while there is much that is useful there is much also left to be desired. It is not very helpful to read in a list of plants for shade, "Lilium," "Campanula," "Veronica." A beginner may easily be led astray by such directions, just as he may by finding in a list of perennials suitable for cutting "Campanula" and even "Aster." Half-truths may lead to complete disappointment. Fortunately, not all the book is like p. 258, where we read, among other things, that "the Giant Snowdrop grows 5 inches high; its real name is Galanthus. The ordinary variety is Nivalis, which grows 3 inches high. You can either have a double or a single type!"

In a book such as this, apparently intended for the small villa gardener, quantities of manure should not be given in terms of so much an acre. Quicklime is recommended as the most valuable form of lime—so it is for some purposes but not for every garden or every soil, indeed not for the majority.

The part dealing with vegetables is by far the best, and the book is pleasantly written and well got up.

"Illustrations of New Conifers." By H. Clinton Baker and A. Bruce Jackson, A.L.S. 4to. ([Simson, Hertford], 1935.) £4 4s.

In 1909 there appeared Volumes I and II of "Illustrations of Conifers," and in 1913 Volume III, the last containing pictures of the species less well known at that time. Mr. H. Clinton Baker, who was responsible for the production of the work, died in April 1935 before he saw the publication of the volume now under review, which is virtually the fourth, and is in all respects in the same form as its predecessors. The short and terse descriptions in the four volumes are from the pen of Mr. A. Bruce Jackson, the leading living authority in this country on the family of the Coniferae. He was assisted in the earlier volumes by Dr. A. Henry.

There is little doubt that this new volume will be sought for by those fortunate enough to possess the previous three, the value of which has risen considerably in recent years.

Your reviewer must own to counting himself among those, of whom Mr. Bean speaks in his foreword, who find it easier to identify a species from a photograph than from any mental picture of the characteristics described in botanical terms. The photographs of foliage, and in many cases of cones, are so carefully reproduced as to be a true guide in making sure of species and varieties.

For the ordinary grower of Conifers in this country the most valuable additions in this volume are of species, varieties and hybrids of the more familiar families; of the Firs there are sixteen, of the Spruces five, of the Pines three, with a like number of Hemlocks. Seventy-seven Conifers are included, and of this number seventeen are Podocarps, nearly all of them too tender for cultivation except in the almost frost-free districts of Cornwall and Ireland. Indeed several of these, and others of unfamiliar genera from south of the Equator, can only be grown in our country under glass; the material for illustrations of many of these is from plants growing in the Temperate House at Kew.

There are very few known Conifers of the world which are not included in the four volumes, and it seems a pity that some omissions were not made good, at least in the case of all those trees which can now be seen in our country; for example, no mention is made of *Abies nephrolepis*, *Picea morrisonicola*, *Pseudotsuga sinensis* and *P. Forrestii*, all in cultivation though rare in our pineta; another omission is *Larix Principis Rupprechtii*, which has been grown fairly extensively from the seed Wilson gathered in Korea in 1917.

Of the four Chinese Spruces, all of which we owe to seed sent home by Wilson, three—*Picea likiangensis*, its variety *purpurea*, *P. asperata* and *P. Wilsonii*—are illustrated in this volume. The fourth, *P. brachytyla*, appeared in Volume III under Masters' name of *P. complanata*. *Abies Faxoniiana*, *A. Faberi* and *A. Forrestii* are described as varieties of the vexed species *A. Delavayi*. Mr. Bruce Jackson in his valuable "Notes on Chinese Conifers," prepared for the Conifer Conference of 1931, gave his reasons for these attributions.

In the prospectus of the book a list of the species illustrated is shown. It would have been an added convenience if this had been printed in the volume alongside of the list of contents and the index of popular names and synonyms. The numbering of the illustrations is somewhat faulty.

An unfortunate error occurs opposite p. 35, where a branch of *Juniperus bermudiana* is reproduced as *Diselma Archeri*, a rare Tasmanian conifer which is not known to be in cultivation. The Irish plant figured as this was wrongly named *Diselma* at Kew in 1932. Since the photograph was published the plant has fruited, which leaves no doubt as to its identity.

As the regions of the world where Conifers may be found have now been so carefully explored, our descendants will not enjoy our advantages of seeing new species growing to adolescence. If in years to come a fifth volume of this work appears it will contain few novelties other than hybrids. This volume illustrates several crosses of great interest which will probably be extensively planted in the future. The natural hybrids between *Cupressus macrocarpa* and *C. nothkalensis*, between *Larix decidua* and *L. leptolepis*, between *Pinus Ayacahuite* and *P. excelsa*, to which the names *Cupressus* × *Leylandii*, *Larix* × *eurolépis* and *P.* × *Holfordiana* have respectively been given, are all well portrayed.

F. R. S. BALFOUR.

"History of Gardening in Scotland." By E. H. M. Cox. 8vo. 229 pp. (Chatto & Windus, for New Flora & Silva Ltd., 1935.) 12s. 6d. net.

Had Mr. Cox required a sub-title for his scholarly and admirable book, he might well have chosen "The Evolution of Civilization in Scotland." His researches, in some wise reflected by the 75 bibliographical citations, make it clear that the progress of gardening marched *pari passu* with the advance of civilization.

After a short reference to Loudon's problematical assertion that a garden existed within the grounds of the Abbey of Icolmkill in the sixth century, the author tells us that it was not until after the absorption of the Normans that gardening was really practised in the land; how, beginning in religious foundations, it gradually extended to the royal castles, from thence to the seats of noblemen, and eventually to country houses, villas (which are by no means a product of modernity), and cottages. Headway was slow in that realm of interecine feuds, poverty and ill-tended soil; moreover, it was seriously inhibited by the obstinate resistance to progress made by a population discouraged by the incidence of yearly leases and other paralyses ordered by an ignorant and short-sighted legislature. The growth of horticulture depended upon the building-up of its various parts, but the gradual transition from a meagre collection of coarse vegetables and a few medicinal herbs in the early monastery garden to a full complement of glass-houses, flower borders and kitchen gardens in the latter half of last century, from the virtual absence of woodland on the fourth Duke

of Athol's estate to his planting of 27,431,600 trees between 1774 and 1826, are transformations of such magnitude that the pen of our present historian is necessary to indicate their full significance. Unaided, we are inclined to accept such phenomena as mere matters of course. Although the canvas is a broad one, the author gives the same attention to detail as to the general plan. We gather, for instance, that an item of "80 sets of Whyt Lily roots . . . lib. 2" appears in the Account Book of Sir John Foulis (c. 1689). As a pound Scots was about equivalent to 1s. 6d., it appears that the market price of *Lilium candidum* was less than two a penny! It is interesting to learn on the eve of the Conference on Alpine Plants that James Lothian, gardener to Mr. W. A. Campbell of Ormsary, wrote the first book on their cultivation, at all events in this country. Lothian, even in 1845, was apparently quite familiar with the still uncommon *Loiseleuria procumbens*, *Jeffersonia diphylla* and *Shortia galacifolia*. He is but one of the many famous gardeners whose biographies are touched upon. Reid, Miller, Aiton, Macnab, Hopkirk, and their contributions to horticulture, are briefly sketched in, and we are reminded of our debt to such intrepid collectors as Menzies, Douglas and Fortune. A short account is given of the extraordinary figure of George Don—that accomplished botanist but wretched gardener who demonstrated his lack of perspicuity by stocking in his nursery 69 Trifoliums, 44 Hieraciums and over 100 Grasses. The converse of his methods was found in those of the enterprising firm of Dickson who, over a century ago, catalogued *Arbutus Andrachne*, *Epigaea repens*, *Gordonia lasianthus* and *G. 'Alatamaha'*.

There is one matter on which we join issue with Mr. Cox. Whilst agreeing that Scottish parochial schools did not commonly include horticultural subjects in their curriculum, we hold the opinion that the thoroughness of the training they gave in the more important business of How to Learn (rather than How to Parrot), through teachers not infrequently versed in classics and philosophy, has had a greater influence on the careers of Scots gardeners (and statesmen, ambassadors and scientists, so far as that is concerned) than he is disposed to allow.

That, however, is only a personal view. The book itself, as might be expected from an author of such experience and repute, is not only of the greatest interest at the moment, when horticultural history is prominent in gardeners' minds, but will remain authoritative for all time.

"Garden Science." By John Grainger. 8vo. 265 pp. (University Press, London, 1935.) 4s. 6d.

The citizens of industrial Yorkshire are not far in space from the hillside air of the Pennines, and in time are not long removed from a population with rural pursuits. It is interesting, therefore, to find that the municipality of Huddersfield, with its Tolson Memorial Museum, through its Curator is attempting to foster a knowledge of rural life. The present book has been written in the hope that it will serve as an introduction to the principles underlying the practice of gardening. Whilst the book may primarily have been written for the teacher and student concerned with school gardens, the author has always considered the more general reader.

The early chapters deal with the seed and its germination, and attention is drawn to modern methods of raising Orchid seedlings in controlled conditions; then follow chapters dealing with the nutritional processes of plants. A useful set of tables illustrates the rates of application of, and loss by drainage of, artificial fertilizers; but these tables have probably been made up from an agricultural point of view where the limited financial return from an increased crop has influenced the rate of application recommended. It is no uncommon thing for fruit growers on dry, sandy soils to use sulphate of potash at, at least, five times the rate of application mentioned in the table.

Reference is made to vegetative propagation and pruning, seed production without pollination, inherited sterility, and to the origin of some of our common garden plants. There is a short chapter dealing with fungus diseases of garden plants: here occasionally there are signs of rather hurried preparation of the text; the nomenclature does not appear to be quite up to date. We read that the variety 'Lloyd George' appears to be less severely affected than other Raspberries by the mosaic disease: once true, it is no longer so. On p. 226 we find Bordeaux mixture as an insecticide. On p. 227 there is no mention of the fact that tar-oil washes are primarily used as ovicides—a grave omission. Rather pleasing is the supposition that insectivorous plants are grown in green-houses to destroy pests!—they prove attractive to a very limited section of the insect population. The apparatus on p. 231 is long out of date and cannot now be purchased commercially.

The appendix deals with a small school garden laid out for instructional purposes in the district.

Generally, there is much information in the book; and many of the photographs are excellent, others are not good—*e.g.* those on pp. 145 and 239. The text too is somewhat uneven: in some instances the very latest information is presented, whilst in others the information is completely out of date. The book should serve a useful purpose in introducing its readers to horticultural topics and problems; it is reasonably priced; but "Garden Science" must needs be accurate.

M. A. H. TINCKER.

"Herbs." Ministry of Agriculture, Bulletin 76. 8vo. (H.M. Stationery Office, London, 1936.) Paper covers, 1s.

Many inquiries regarding herbs show the interest taken in the growing of these plants, albeit the inquiries often relate to the possibilities of commercial production and in that direction great caution is desirable lest the supplies outrun the demand.

Several recent books exist giving cultural directions and this addition adds much of value to what has already been written. The herbs are divided into culinary herbs (Parsley, Mint, Sage, Tarragon, Horseradish, Thyme, Fennel, Sorrel, Borage, Chervil, Marjoram, Savory, Balm, Basil, Southernwood, Tansy); aromatic herbs used in perfumery and confectionery (Peppermint, Lavender, Rosemary, Rose, Geranium, Violet, Orris, Jasmine, Liquorice, Angelica, Caraway, Coriander, Dill, Anise, Fennel, Poppy); and medicinal herbs (Belladonna, Henbane, Stramonium, Opium Poppy, Valerian, Aconite, Squinting Cucumber, Lettuce, Hemlock, Digitalis, Violet, Chamomile, Parsley seed, Rhubarb, Pennyroyal, Dandelion, Buckthorn, Colchicum, Horseradish, Red Poppy petals, Elder flowers, Comfrey, Coltsfoot, Hyssop, Horehound).

The various forms of mint and other herbs of which several varieties (or species) exist are succinctly described and warnings given regarding the varying values of different grades or types of certain of the herbs.

"Intensive Systems of Apple Production." Ministry of Agriculture, Bulletin 49. Ed. 3. 8vo. 39 pp. (H.M. Stationery Office, London, 1935.) 1s.

The writers of this Bulletin venture no expression of opinion on the commercial possibilities of growing Apples on the intensive system of cordons and the like but give a clear account of the methods at present used and where possible of results obtained.

The call for a third edition has given the opportunity of revising certain parts of the Bulletin and of including the latest information from experimental plantations.

"Gardening for Egypt and allied Climates." By M. Stout. 8vo. 286 pp. (Wheldon & Wesley, London, 1935.) 10s.

Published under the auspices of the Egyptian Horticultural Society, and giving directions for horticultural practice in Egypt, together with lists of plants suitable for the climate, this book will be found useful to all who garden in sub-tropical countries. It is a revised edition of a former book by Miss Agar and Mrs. Stout, published in 1921, and incorporates the results of experience gained in the intervening years.

About one hundred pages are occupied by the lists, the rest by articles on special plants, a calendar of operations, hints on the construction of the garden and on gardening operations and a list of Arabic names of many plants mentioned.

"Das nieverlorene Paradies: aus deutschen Wäldern, Wiesen und Garten." By Metzger and Oefer. Fol. 240 pp. (Gartenschönheit, Berlin, 1935.) Paper covers. RM. 8.75.

Like all the publications of "Gartenschönheit" this gives admirable reproductions in half-tone of photographs of plants, some taken in the garden, some of wild plants growing naturally. Plants of all kinds are illustrated—fungi, trees, vegetables, agricultural crop plants, flowers, fruits, garden scenes—all find a place, and all alike are excellent. The paper is highly glazed (as it must be for this type of illustration), the text is in old-style German type, and the names of the plants are also in German.

## NOTES AND ABSTRACTS.

*Aconitum Forrestii* Stapf. By H. K. Airy Shaw (*Bot. Mag.*, t. 9424; Nov. 1935).—A species collected by Forrest in the Lichiang Range in N.W. Yunnan (see fig. 73, R.H.S. JOURNAL, 41, p. 206), up to 5 feet in height with a dense raceme of 50 to 60 purplish-blue flowers.—F. J. C.

*Caralluma carnosa* Stent. By E. P. Phillips (*Flow. Pl. S. Afr.*, t. 592; Oct. 1935).—Transvaal. Flowers campanulate pink with numerous deeper coloured spots.—F. J. C.

*Caralluma Keithii*. By R. A. Dyer (*Flow. Pl. S. Afr.*, t. 600; Oct. 1935).—A new species from Swaziland, with long teeth on the green purple-spotted stem. Flowers small dark purplish red with a few white spots.—F. J. C.

*Caralluma Knobellii*. By E. P. Phillips (*Flow. Pl. S. Afr.*, t. 593; Oct. 1935).—This has already been figured at t. 363 as *Stapelia Knobellii* and is now transferred to *Caralluma*. Flowers stellate, about  $1\frac{1}{2}$  inches diameter, with purple spots on a white ground, segments yellow margined.—F. J. C.

*Caralluma piaranthoides* Obermeijer. By E. P. Phillips (*Flow. Pl. S. Afr.*, t. 599; Oct. 1935).—S. Rhodesia. Allied to *C. carnosa* but quite distinct. Flowers small, brownish green with numerous brown spots.—F. J. C.

*Caralluma Rogersii* Bruce & Dyer. By E. P. Phillips (*Flow. Pl. S. Afr.*, t. 595; Oct. 1935).—N. Transvaal. A species with long teeth from the stem, first called *Stapelia Rogersii*. Flowers greenish yellow.—F. J. C.

*Coleus Frederici* G. Taylor. By J. Hutchinson (*Bot. Mag.*, t. 9421; Nov. 1935).—An Angolan plant with green leaves and loose panicles of deep blue flowers. A greenhouse plant.—F. J. C.

*Duvalia modesta* N. E. Br. By E. P. Phillips (*Flow. Pl. S. Afr.*, t. 598; Oct. 1935).—Native in shady places, prostrate; flowers small, deep reddish chocolate.—F. J. C.

*Gentiana ornata* Wall. By C. V. B. Marquand (*Bot. Mag.*, t. 9416; Nov. 1935).—Plants have previously been figured under this name in the *Bot. Mag.*, but were wrongly identified. When in flower the campanulate corolla easily distinguishes this species, which was not introduced till 1929 by seed from Nepal.  
F. J. C.

*Gurania malacophylla* Barb. Rodr. By T. A. Sprague (*Bot. Mag.*, t. 9415; Nov. 1935).—The male flowers of this plant have already been figured in the *Bot. Mag.* (t. 8085), and apparently young plants bear only male inflorescences. This species proves monoecious. The orange-scarlet calyx makes a very attractive flower. The foliage is extremely variable in form. Native of Amazons.  
F. J. C.

*Huernia scabra* var. *longula* N. E. Br. By E. P. Phillips (*Flow. Pl. S. Afr.*, t. 596; Oct. 1935).—Karoo. Dwarf with relatively large yellow flowers spotted with brownish red.—F. J. C.

*Huernia Verekeri* Stent. By E. P. Phillips (*Flow. Pl. S. Afr.*, t. 591; Oct. 1935).—A Rhodesian species with small stellate pink flowers.—F. J. C.

**Lettuce, Bottom Rot.** By G. R. Townsend (*U.S.A. Exp. Sta., Cornell, Mem.* 158; April 1934; figs.).—The rot of Lettuces due to the attack of the fungus *Rhizoctonia solani* is described, and the conditions conducing to the attack are indicated. Cabbage Lettuces are most prone to the rot, which attacks the basal part of the heart, and larger plants suffer more than smaller. Rotation, sanitation, use of green manures and good cultivation help to control the disease,

which is not affected by copper or sulphur fungicides. Mercuric compounds are, however, effective, though some injure the crop. The best results were obtained by applying 20 to 25 lb. of ethyl mercuric phosphate dust to the acre under nearly mature plants.—*F. J. C.*

*Leycesteria crocothyrso* Airy Shaw. (*Bot. Mag.*, t. 9422; Nov. 1935).—A single plant of this yellow-flowered species was discovered by Kingdon Ward in Upper Assam and fortunately seed germinated readily. The shrub needs greenhouse treatment.—*F. J. C.*

*Myrtus obo cordata* Hook. f. By B. L. Burt ( *Bot. Mag.*, t. 9417; Nov. 1935).—Native of New Zealand. A shrub up to 12 feet high with small obo cordate leaves, white flowers in which the numerous stamens are conspicuous, and small scarlet fruits. Needs a temperate house.—*F. J. C.*

*Ornithogalum montanum* var. *platyphyllum* Boiss. By W. B. Turrill (*Bot. Mag.*, t. 9420; Nov. 1935).—A wide-leaved form of the variable *O. montanum* and including *O. cuspidatum* and in part *O. lanceolatum*. The form of the white-flowered *O. montanum* from Asia Minor, Iraq and Persia.—*F. J. C.*

*Pelexia maculata* Rolfe. By V. S. Summerhayes (*Bot. Mag.*, t. 9448; Nov. 1935).—A terrestrial Orchid with leaves spotted white. Inflorescence a spike of green and white flowers with narrow segments.—*F. J. C.*

*Piранthus Framesii* Pillians. By E. P. Phillips (*Flow. Pl. S. Afr.*, t. 597; Oct. 1935).—The succulent stems green, spotted with purple, flowers brownish.  
*F. J. C.*

*Prunus cornuta* Steudel. By J. R. Sealy (*Bot. Mag.*, t. 9423; Nov. 1935).—A hardy deciduous tree up to 30 feet high, native in W. Himalaya, nearly related to *P. Padus* but with larger leaves, longer petioles, and smaller flowers.—*F. J. C.*

*Rhododendron mallotum* Balf. f. et Ward. By J. Hutchinson (*Bot. Mag.*, t. 9419; Nov. 1935).—A tree in Upper Burma and W. Yunnan with deep green leaves and a compact truss of scarlet campanulate flowers.—*F. J. C.*

*Rhododendron Prattii* Franch. By J. Hutchinson (*Bot. Mag.*, t. 9414; Nov. 1935).—A shrub with large elliptic leaves thinly felted below and trusses of about ten white flowers spotted with deep pink, widely campanulate and about 2 inches across. Native in Szechwan and hardy in shade in this country.  
*F. J. C.*

**Sarcocaulon**, The genus. Die Gattung *Sarcocaulon* (DC.) Sweet.] By Sigmund Rehm (*Engler, Bot. Jahrbüch.*, vol. lxxvii, Heft 3, pp. 264–274, tt. xiv–xvii & text-illus.; 1935).—*Sarcocaulon* is a genus of dwarf, somewhat shrubby, succulent plants, belonging to the Geraniaceae and confined to south and south-west Africa. The leaves persist only for a short time; horticulturally the plants are interesting for their very stout often thorny stems and their large white, rose or yellow flowers. The author of this revision distinguishes twelve species, ten of which are illustrated by photographs of living plants grown for the most part at the Göttingen Botanic Garden. In *S. multifidum* and *S. Herrei* the leaves are finely divided, in the others undivided. *S. inerme*, with thornless growths and rose-violet flowers, *S. crassicaule* and *S. flavescens*, both yellow-flowered, are new species. *S. spinosum* (Thunb.) O. Kuntze is separated from *S. Burmanni* (DC.) Sweet, *Bot. Mag.* t. 5729, with which it has been confused, on account of its larger spines, different leaves, longer pedicels, silky sepals and yellowish (not rose or white) flowers.—*W. T. S.*

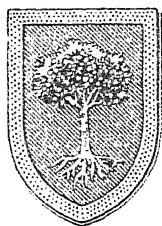
*Trichocaulon piliferum* N. E. Br. By E. P. Phillips (*Flow. Pl. S. Afr.*, t. 594; Oct. 1935).—S. Africa. Stems stout, cylindric; flowers small, deep red-purple.—*F. J. C.*

**Violets**, Scab caused by *Sphaceloma*. By L. M. Massey and A. E. Jenkins (*U.S.A. Exp. Sta., Cornell, Mem.* 176; April 1935; figs.).—A fungus, *Sphaceloma violae*, now described for the first time, has caused injury to sweet Violets in U.S.A., producing yellowish-brown spots on runners, foliage, flower stalks and flowers. Pansies and some other species of *Viola* are also liable to infection. The temperature relations of the fungus are described, and spraying with Bordeaux mixture is recommended as a control.—*F. J. C.*



# JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

Vol. LXI



Part 4

April 1936

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## THE CARE OF OLD TREES.

By A. D. C. LE SUEUR, B.Sc., F.S.I.

BEFORE dealing with the methods by which the existence of old trees can be satisfactorily prolonged, it is necessary to consider the actual meaning of the word "old" as applied to trees, and arising out of that the expectation of life itself.

Theoretically speaking, there is no such thing as a natural limit to the life of a tree, as it is rejuvenated each year by the formation of new tissues. Actually the life of a tree is very definitely limited, but this is due, as far as can be seen, not so much to internal causes as to external ones such as disease or conditions of a similar type that interfere with normal growth.

There is a considerable difference in the age to which trees can attain, and a considerable difference between the average length of life enjoyed by various species. Normally short-lived species growing under favourable conditions will often outlive long-lived species growing under unfavourable conditions. Where conditions are good, yew is believed to have reached a thousand years, with Oak a good second. Two hundred years is a long life for an Elm, but there seems little doubt that this species, carefully looked after all its life, would reach a greater age quite easily. It is an excellent example of tree life limited by external agency. Beech will reach three hundred years, but conditions again must be good. Quick-growing trees have a short life, as, for example, Poplar, Willow, Birch, and the like.

The comparative longevity of a single tree will depend therefore on two things :

- (a) That the tree has been allowed to develop normally in accordance with its normal requirements.

- (b) That the locality is definitely suitable, that is to say it offers the tree all it requires as regards soil, climate and shelter.

Actually, then, the natural duration of the life of a tree may be taken as being the period of time during which it is able to withstand unfavourable conditions of soil and atmosphere and the attacks of disease and of insects.

There is little doubt that, by means of correctly applied artificial assistance, it is possible to prolong the life of a tree beyond the age at which it would naturally succumb if left to work out its own salvation.

As a tree increases in age and size it creates greater demands on the soil, which is not always able to cope with them. Wounds, and dead branches equivalent in themselves to wounds, appear, so that disease spores are able to enter, and decay spreads, interfering with the health of the tree and its mechanical stability. Wind is always the enemy of old trees. Water may be its best friend or its worst enemy. Water helps to spread decay as without it fungal disease cannot function, whilst its paucity or excess in the soil is also all-important.

To a considerable extent the arboriculturist can assist the tree in its struggle for existence. He can remove water and supply it when necessary, he can feed the tree and supply it with air, and he can protect it to a great extent against damage by wood and leaf destroying fungi and insects. It is only those who travel all over the country who are capable of realizing how greatly the trees of England are suffering from ignorance of the fact that they are helpless things that need care in the same way as any other growing plant.

Mr. DALLIMORE of Kew goes straight to the root of the matter when he writes : \* " Definite training in arboriculture is even more difficult to get than training in forestry. Young gardeners are rarely given special training in this subject, and a good deal of the necessary knowledge is procured in a very casual way. Many of these who practise horticulture would be better equipped for their work had they more experience in the cultivation and management of ornamental trees, and this should be recognised by those who aim at training youths for a horticultural career."

A competent forester is not necessarily a competent arboriculturist, as the training differs to some extent. The work of the forester is to produce clean timber in quantity, to be felled and got away as soon as possible. His interest is concentrated on perhaps a dozen species or varieties and his only cure for damage or disease is the axe.

The arboriculturist is chiefly concerned with shape, colour and form and individual growth. For every tree the forester knows the arboriculturist must know ten at least. His acquaintance with botany, entomology, and mycology must greatly exceed that required by the forester, and his work is based on the fact that ornamental trees exist

\* Quarterly Journal of Forestry, January 1936.

for the benefit of the land, whereas in forestry the land is for the benefit of the trees.

If, for example, the vital importance of wound treatment were more generally realized, one great step forward would have been taken in the prolongation of tree life. Probably half the troubles to which a tree is subject are due to branch wounds, and taking the country right through, one might go so far as to say that over 90 per cent. of these wounds are either completely neglected or incorrectly treated. A neglected branch wound may be slower in action than a bayonet thrust wound in the human body, but the result is the same in the end.

That in the past little or no interest was taken in the preservation of old trees may be seen by an inspection of the plates and actual trees figured in STRUTT'S *Sylva Britannica*, published in 1826. Of the trees that remain, few if any show signs of the slightest attempt to treat wounds and remove dead branches. Where trees remain in good condition, it is probably due to the fact that they are low and compact, or unusually well sheltered. The great Chestnut at Tortworth, probably the oldest deciduous tree in the kingdom, is an example of this kind.

It may be added that STRUTT makes most scathing remarks concerning the method of lopping and pruning carried out on this tree in the early part of the nineteenth century.

*Wounds.*—Before actually dealing with wounds and their treatment, it is necessary to realize that, generally speaking, a wound is the only way in which the spores of wood-rotting fungi can enter the tree. They cannot penetrate healthy bark or root epidermis, and the longer these are kept intact, or the quicker they are repaired after damage, the better for the tree. Disease of the wood-rotting type may therefore usually be classed as a contributory or secondary agent, the primary one being the wound itself.

The efficient protection of wounds is, if anything, far more important in old trees than young ones, as wounds in old trees heal slowly and if of any size, seldom heal completely.

Wounds may be of various kinds. They may be (1) artificial pruning wounds, or (2) accidental wounds caused by wind-break in the branches or trunk wounds caused by wheels, sun scorch (fig. 27) and the like. As a rule, the most usual stubs are caused by wind-breakage in the crown, but occasionally lower branches may tear away strips of bark from the trunk as they fall. In public places, especially those of the natural woodland type, thoughtless persons still carve initials and the like on trees. The worst offenders in this respect are courting couples, as a brace of hearts can do considerable local damage to bark. The commonest type of wound is, as a matter of fact, a dead or dying branch.

The actual treatment of wounds is comprised in the words "clean up, disinfect, and waterproof." By "cleaning up" one understands the cutting away of ragged pieces of bark, so as to get a clean edge

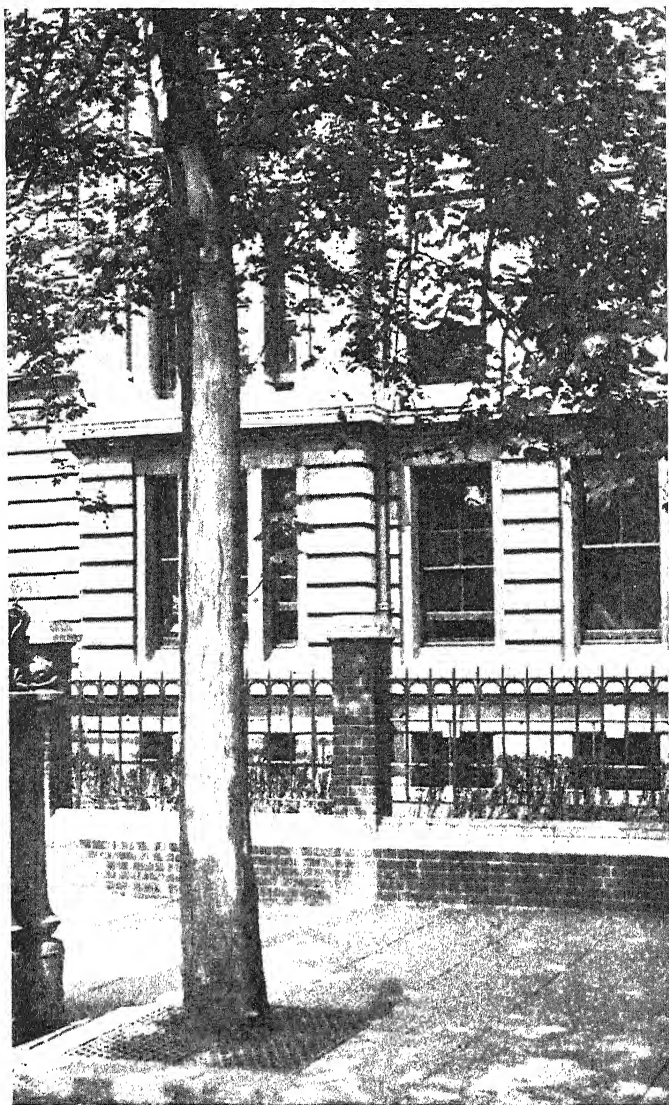
to the wound. With broken or dead branches, this simply means cutting the branch back either to the trunk or to a larger branch. Never allow a branch to be pruned to a short stub. The stub practically always dies, and is in its way worse than an open bark wound, as it will decay faster and deeper, and less conspicuously.

Trunk wounds are a different matter. If fresh, they should be gone round with a wide sharp chisel or heavy knife, and tongues of bark sticking up from the base should be cut away, as should isolated portions of bark. If they are of old standing, they require much more care. On such wounds, especially if large, examination will often show that sections only have formed a callus, with the result that the wound is healing irregularly. Before actually cutting away anything, a bark trace should be made around the wound so that such growing areas can be left undisturbed. A neat geometrical figure cut in the bark does not necessarily make the wound heal any better, and as the growing layer on old trees functions slowly, such growing areas are far better left alone to get on with the work they have already started, provided that the final shape of the wound is more oval than square. The bark cut away, and cleaned to a sharp outline, the surface of the wound should then be examined, and if rotten wood shows, it should be scraped away with a two-handled shave. If the wound carries down to ground level, the soil should be dug out at this point to see if protection is required below, as it generally turns out to be. Then dress the wound surface heavily with a fungicidal dressing. Of these the lighter creosotes are perhaps the most convenient and effective. This dressing will also help to judge the condition of the wood. If the creosote dressing lies on the wood for a short time and reflects the light, the wood is probably reasonably sound. If, on the other hand, it sinks in at once, leaving a dull surface, that area is usually unsound and requires further scraping to get to hard wood.

Such dressings cannot be considered complete even if the wood that they protect is hard and sound. All wounds, especially those of any size, dry out and crack vertically, and these cracks give excellent access to the unprotected wood below for insects and fungus spores. Above the creosote it is therefore absolutely necessary to apply a weatherproof dressing. Tar for this purpose has a drawback, as, being hard when dry, it cracks with the wood. Less than a mile from this building, there are numbers of trees with large trunk wounds, originally dressed with tar. These are full of cracks up to 24 inches in length,  $\frac{1}{8}$  inch in width, and in some cases quite half an inch in depth. Tar is effective only when dressings are repeated until all motion in the wood immediately below has ceased.

Lead paints, worked up in various ways, are recommended as wound dressings, but excellent as these may be for use for small branch wounds on fruit trees and the like, the same objection as regards "drying out cracks" applies.

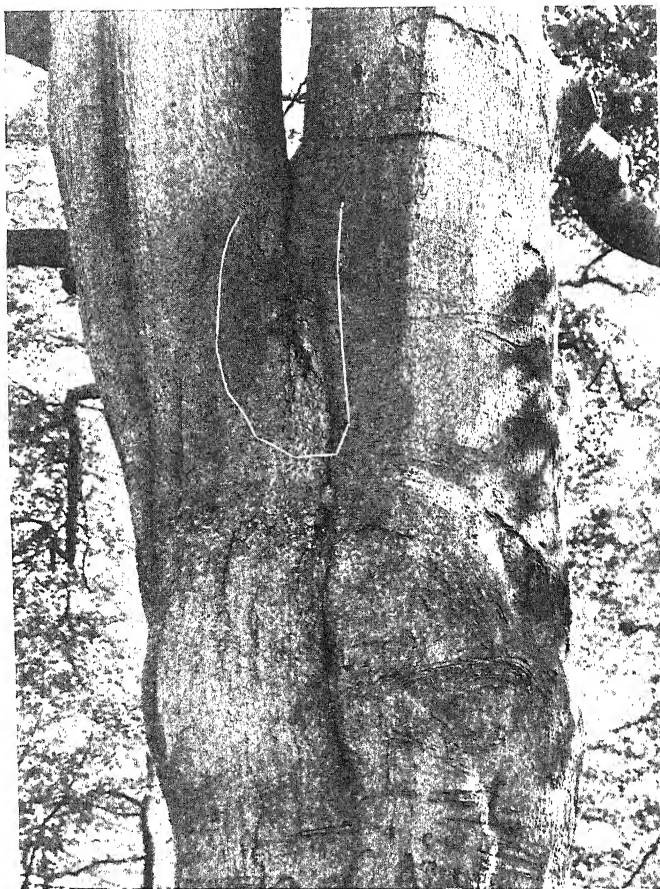
Experiments with various substances lasting over a number of



[By courtesy of "Country Life"]

FIG. 27.—SUN-SCORCH IN PLANE TREE ON THE VICTORIA EMBANKMENT.

Note "checks" due to drying of exposed wood. These were covered some years ago with a soft bituminous coat which has kept an unbroken surface ever since.



*By courtesy of "Country Life"*

FIG. 28.—WATER CUP—A CAVITY FORMED AT JUNCTION OF TWO BRANCHES.

The cavity, the depth of which is shown by the white line, contained several gallons of water which was drained by boring a hole upwards.

The cavity was then dried out, waterproofed and filled.

years show that, up to the present, soft bituminous preparations laid on thickly with a brush are very satisfactory. They harden on the surface, but remain slightly elastic below and thus adjust themselves to any movement in the wood. When old wounds with very wide cracks have to be treated, dressing should take place in the summer. By wedging these cracks with small pieces of oak, or for purely ornamental trees, with flat nails, excessive movement is checked. All bituminous dressings must be put on when the wood is dry, and if perpetually damp or inclined to be unsound, a first coat of tar should ensure satisfactory adhesion.

When cutting away the bark, painting the edge of the cut with shellac will prevent the growing layer from drying back. This especially applies to Beech, the cambium layer of which is both slow growing and very sensitive. The bark of young trees—for example, Horse Chestnut—has a way of contracting laterally if cut during the growing season, with the result that later on a ring of untreated wood is exposed, and such trees should be inspected at intervals for some months after treatment.

In spite of the general advance in arboricultural knowledge, there still seems to be an idea prevalent that metal, such as lead, nailed to the bark and hung over a wound is a satisfactory method of treatment. Nothing could be worse. Metal laid over bark is neither weather, insect nor fungus proof, and the wound underneath is converted into an ideal incubation area for insect damage and disease. The same applies to metal used on cut tops. Where tops have to be taken out leaving large open areas of wood, the treatment suggested is to make the cuts sloping, treat with creosote and then apply a thick coat of a plastic bituminous type. Beech tops treated in this way have lasted for years. Others left untreated have rotted down several feet.

Where bark has been bruised by a blow, it should be treated as a wound and cut completely out, as bruised cambium always dies, and by the time the dead bark falls off infection has probably taken place.

*Cavity Wounds.*—Cavity wounds (fig. 28) may be the result of a decaying branch stump, of fungus action working from within, or from the neglect of a simple bark wound. When in a branch and of such a size that they may weaken it, the best thing is to remove the branch and so avoid all possibility of future trouble. Trunk cavities are of all sorts, sizes and types, and it is quite impossible to deal with them in detail here. Of the commonest types are cavities formed by rotting, generally long and narrow, and branch stubs which stretch into the tree some distance. These should be cleaned out, disinfected and filled up. Filling in small holes can be done with a creosoted hardwood plug sawn flush. Concrete may be used or, better still, a mixture of a novel type which in default of a better name may be referred to as "Synthafilling." This may be made by mixing with sawdust a type of rubberized tar known commercially as "Synthaprufe."

Extensive experiments show that when properly mixed the composition makes an excellent filling, waterproof, sporeproof and slightly elastic. It is also suitable for the smaller base wounds.

Larger cavities must first of all be cleansed of all diseased wood as far as is possible and then disinfected. In this instance the words *as far as is possible* are used deliberately. With old trees an attempt to remove all diseased wood is an attempt at theoretical perfection that will seldom be realized. It is a recognized fact that the mycelial threads of certain fungi work well in advance of the main body, and are possibly inches into what appears to be sound healthy wood. To clear a big area of suspected wood may be a most expensive thing. Rot progresses as a rule extremely slowly, and in many cases, provided that the tree itself is healthy, it may go on for many years quite satisfactorily as long as the outside of the wound is cleared as far as possible, and sealed against water. In such cases, therefore, the suggested procedure is to clear into reasonably sound wood, soak with creosote and then paint heavily with bitumen, preferably having put on a good coat of tar first. All points where water can lodge should be cut away and smoothed over, even if sound wood.

As regards the filling of cavities, two schools exist: one that advocates filling, the other that prefers the open cavity. Filling, if properly done, seals the wound, and possibly makes it look more natural—at a distance. It has no effect on the health of the tree and little effect on its strength from the purely mechanical point of view. If properly done, it may be a very expensive process, and unless perfectly done, the remedy may prove worse than the disease, as “left-over” mycelium may be working; it is impossible to tell what is going on behind the filling, whilst, with a properly protected open cavity, it may be inspected at any time. A considerable filling may so affect the elasticity of a trunk that it snaps at the top of the filling. Fillings from the ground up are often satisfactory as there is little movement at the base of the tree, and comparatively large cavities can be filled if required. For this concrete, divided into sections 4 to 6 inches in height, is satisfactory. In no case should any filling be placed over bark or above the level of the wood.

It has already been stated that the mycelial threads (the destructive portion of the fungus) may extend into apparently sound wood for some distance. In other cases these threads may not extend further than the discoloured wood around the wound. The fungus may be one that lives only on the living sapwood or outer portion of the wood. Again, certain fungi which primarily attack and destroy the heart-wood may die when this is done, or they may then attack the sapwood.

From this it is obvious that anyone attempting to deal with the excision of decayed wood on a considerable scale should possess an adequate knowledge of the habits and appearance of the commoner types of wood-destroying fungi. Where this knowledge is lacking, work may be carried out that is in reality absolutely useless, the



only person benefiting being the one that advised and actually carried out the operation.

Expensive fillings are undertaken in old Oaks obviously infected by the Common Sulphur Polypore. No one who knows enough to realize the extent to which this fungus can ramify would think of carrying out extensive work on such a patient.

From the purely mechanical point of view, soft-wooded trees of the Horse Chestnut, Willow and Poplar type should never be extensively filled as close connexion between filling and wood is practically impossible, and no tree is worth expense unless it has a considerable expectation of life. Contract prices for excavating and filling should never be accepted. No man knows what he is up against until excavation is completed and by that time he may have gone practically through the tree from one side to the other. A filling must form a perfect "seal," and if any leakage appears the money spent has been wasted.

The so-called fungus, in reality the fructification, should always be removed when seen, whether the tree is worth repairing or not. It is in this stage that the fungal spores are disseminated, and float through the air until in certain cases they alight on an open wound elsewhere. A single fructification of *Polyporus squamosus*, one of the commonest of British fungi, may produce a billion spores in one season, and it is fortunate that the odds against any of these finding a suitable resting-place are somewhere about a billion to one. After removal the fructification should be burnt.

Hollow trunks can be a nuisance as they are apt to fill with water and leaves, forming a wet humous mass that encourages decay. If the top of the trunk is still capped, holes that let in water can be covered by inserting zinc plates in such a way that a callus will grow over and fix them. If the trunk is completely hollow or hollow to within a foot or so of ground-level, the best thing is to break right through, thus ensuring good drainage. The interior can then be disinfected and heavily waterproofed. Old pollarded Beeches and Oaks treated in this way will often dry out and harden up most satisfactorily.

Old hollow trees that are still fairly vigorous, especially those with fairly low crowns and of rugged shapes, are far greater ornaments to a garden when dealt with from a natural point of view. A properly protected cavity is probably just as safe and infinitely more picturesque than half a ton of concrete, which can never appear anything else but concrete however careful the attempt at camouflage.

Another common type of cavity worth mentioning is the "watercup" of Beech formed at the top of the trunk by the grafting together of branch bases. The collection of damp leaves and even water at this point encourages decay, which is probably responsible for more falling of big branches than any gale of wind. Such cavities should be drained, and filled up to the lip in such a way that no water can collect. The rubberized tar-sawdust mixture rammed hard and

"whale-backed" is useful here, and even concrete is better than nothing. The use of rammed clay for this purpose, or in fact any type of filling, is strongly condemned; it is not weatherproof and encourages decay far more than prevents it.

*Artificial support.*—The bracing and staying of old trees is not a thing to encourage. It does not improve the appearance of a tree and it is really far better to lighten the crown by removal or shortening of dangerous branches. In many instances, however, it cannot be avoided, especially with old trees having few branches whose appearance will be completely spoilt by removal, or such trees as old Beech, the branches of which if shortened back cannot shoot enough to fill the gap or even to cover up the shortened end.

Supporting can be done by iron rod or wire cable. Chain is sometimes used but is heavy and very obvious. The branches that require bracing are usually long over-heavy types, long branches growing at an acute angle, and those defective at the junctions with the trunk. Flat-branched evergreens such as Cedar are also often in need of bracing. Most trees lose branches from side swing and torsion rather than from an up-and-down motion, and when staying, this should not be forgotten.

Cables are perhaps the best material for supporting branches of any length and swing, whilst rods do well for heavy branches without much movement, where weight is the chief consideration. Rods are also useful when dealing with split crutches that must be kept from movement. Rods are fastened by passing them right through each branch and fixing with nuts, below which are flat plates let down to the wood (never laid over the bark). Iron bands around the branch should never be used as they eventually kill bark and branch (fig. 29).

Cables may be fastened to short eyebolts passed through the branches, or, if a quick inexpensive job is required, may be simply looped around the branch and fastened with special clips. Pressure is kept off the greater part of the bark by oak slats fixed to the branch around which the cable passes. This method has been used at Burnham Beeches for thirty years, and little or no damage due to bark pressure has been discovered.

The size of the rod or cable naturally depends on the strain expected, and this is not easy to discover. The use of these braces is, with a normal branch, more to check sway than hold up weight, and sway is at its worst at the end of the bough, decreasing as it nears the base. Where there is a defect or a downward tendency, the expected strain may be taken as the full weight of the branch. For "sway" the strength of cable or rod may be less. It is waste of money to use a  $\frac{5}{8}$ -inch bolt for a branch weighing 250 lb., as a  $\frac{5}{8}$ -inch bolt should take a load of over 1,200 lb. quite safely. If cable is used, the correct bolt and nut must also be used, as a safe tensional strain for cable does not mean that a bolt of the same diameter will take the same strain without shearing its threads.

For example, a  $\frac{5}{16}$ -inch wire cable is safest with a  $\frac{5}{8}$ -inch bolt, as both of these should take a dead-weight strain of about half a ton

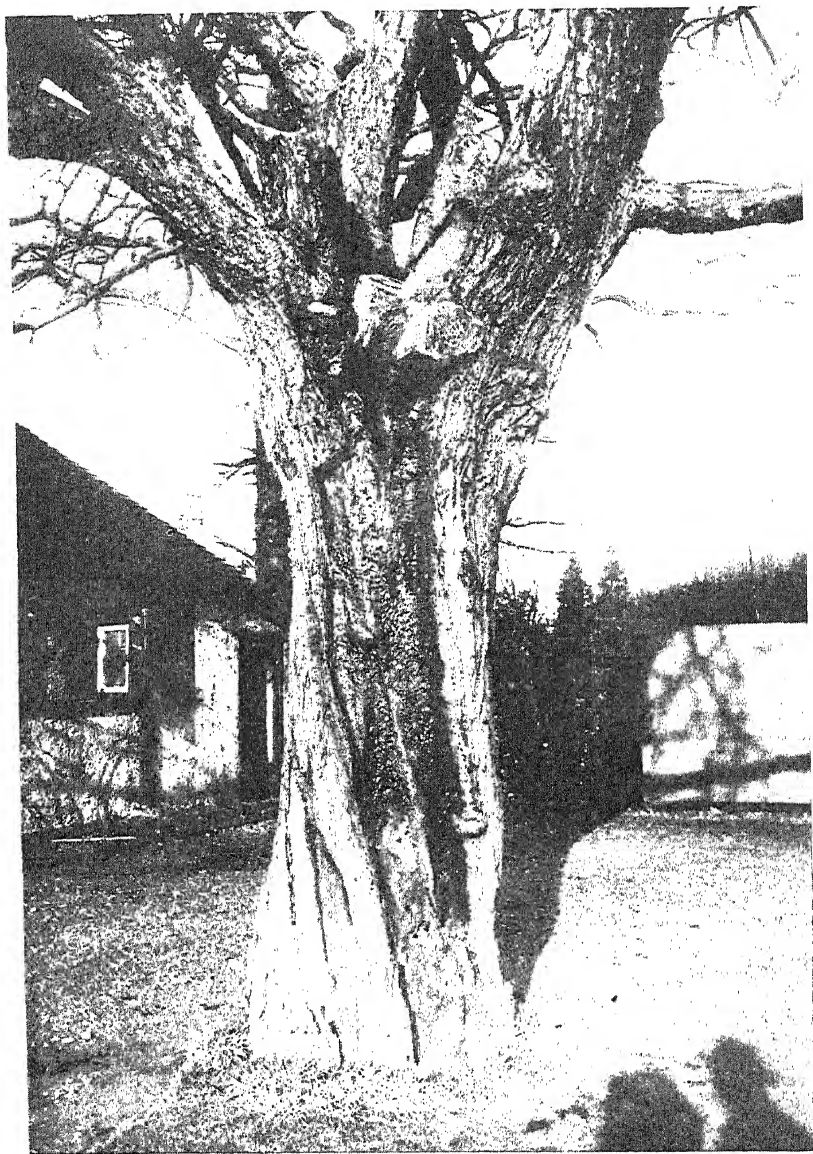


[By courtesy of "Country Life"]

FIG. 29.—BAND-BRACING.

Resulting in constriction of branches and death of bark.

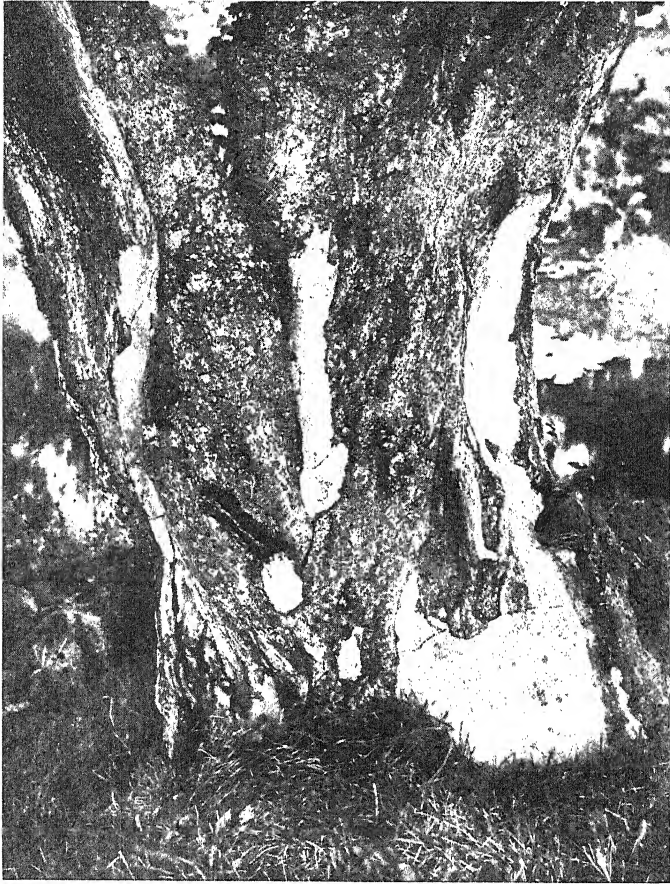
[To face p. 156.]



[By courtesy of "Country Life"]

FIG. 30.—AN OLD CHERRY TREE REPAIRED.

The base of the tree was filled with concrete, the upper half scraped to sound wood and treated with bituminous plastic. Great care was taken not to cut into live bark so as to avoid danger of gumming.



[By courtesy of "Country Life"]

FIG. 31.—CONCRETE WRONGLY USED.

Concrete should not be used for covering superficial wounds. It does not adhere well, is affected by temperature changes, and is forced off by bark growth.



[By courtesy of "Country Life"]

FIG. 32.—"STAG-HEAD" IN OAK.

Top branches killed by lack of water due to constant trampling of clay soil by visitors.

[To face p. 157.]

quite safely. A chain to stand the same strain would have to be practically an inch right through or double the size in appearance.

All staying and bracing should be as high up as it can safely be, and if possible the bolt on the supporting branch should be at the higher level. Cedars are particularly difficult trees to deal with owing to their evergreen flat branches which not only take the wind like a sail, but are often damaged by snow break. In such cases, over-long branches are best taken right out as they are as a rule only leafed at the ends and the loss is covered by others. In mild climates where heavy snow is not usual but wind is dangerous, staying from below rather than above has been found useful on the horizontal branches so common on trees of this species.

*Treatment of old "backward" trees.*—The characteristic symptoms of backward or failing trees are generally seen in the crown. This may carry an unusually sparse number of leaves. The leaves may be smaller than usual or of an abnormal colour. In the Beech they may have a "tucked-up" appearance, very unlike the flat wide-open leaf on the normal tree. The leaves may fall early in the season or may not come out at all. There may be an unusual number of dead or dying twigs, or the crown itself may start to die back, giving the tree the well-known appearance known as "stag's head." At this point it might be added that stag-headed trees are far too common, especially on the property of those misguided people who take a pride in saying that they are so fond of trees that they never allow a branch to be cut. Such people are really the greatest enemy of trees. As with human beings, a dead portion of the anatomy is always a menace to health and is quite rightly removed.

It is not generally realized that the dead crown of an Oak, for example, is often infested with certain fungi of the Stereum type that may live on these branches for years without harm. Should, however, the health of the tree as a whole be affected in some way, such as by drought, these fungi will frequently enter the main part of the tree, which becomes ruined by "heart rot."

Apart from pure senile decay, which obviously is impossible to deal with, the usual cause of trouble in old trees is a faulty condition of the soil. This affects the roots, and root trouble naturally affects the crown. Faulty soil condition may be due to :

- (1) Some food deficiency or toxic agent in the soil. A typical example of the latter type is sewage from a leaking cesspool.
- (2) Excess of water.
- (3) Lack of water, or drought—this probably the most usual cause of all.
- (4) Lack of air due to trampling of clay soil, which is common in public parks.

All these things weaken the root system and reduce the food supply to the crown, and such food as is available either is sufficient for but a sparse crop of leaves or is being taken up by that

part of the crown nearest the ground. The upper part is starved and the characteristic dead branches or "stag's horns" are the result. Where water is lacking, it must be provided if possible; where it is in excess, it must be removed, and a trampled soil requires fencing off and digging over.

Where fertilization is indicated it may be carried out by the application of mulches and manures. These are applied after cultivation to the area where the roots are most active, generally in the case of old hardwoods below the edge of the main "branch spread." Leaf mould, especially Oak and Beech, is a good mulch, as is well-rotted stable manure. The application, generally about 4 inches in thickness, is allowed to lie through the winter and dug in in the spring. On lawns the turf must of course be removed. If the dressing is to be dug in at once and the turf replaced to avoid unsightliness, November is probably the best month for the work.

With trees that shoot easily after pruning, such as Limes, Planes, etc., a good "top pruning" is advantageous, as it lessens the leaf surface, and so assists the roots by giving them less work, but on trees like Beech such action is not recommended.

Artificial manures are occasionally used, mostly of the so-called complete type, but for old trees it appears hardly necessary to apply much potash and phosphorus, as, had these been lacking, the tree would never have reached old age. Nitrogen, which is so easily washed out, appears to be the substance that old trees need most, whilst old Beeches will frequently improve after a heavy dressing of chalk.

The correct fertilization of old trees is somewhat difficult, as little work has been done upon it. One thing appears certain, and that is that at present it is impossible to make up a satisfactory manure for mature trees from a soil analysis. It seems, however, that nitrogen, applied in its slowest acting form, gives satisfactory results in certain cases, and that is as far as matters have gone up to the present. Complete manures may be applied, but in such cases the nitrogen should be far in excess of anything else. Fish guano and dried blood are useful and can be applied on grass, preferably watered in. Nitrate of soda is rather too rapid both in action and passage through the soil, and a mixture of nitrate of soda and sulphate of ammonia plus superphosphate and sulphate of potash makes a good complete fertilizer, if such is required, the nitrogen being utilized as it were in two sections, the sulphate of ammonia acting less rapidly than the nitrate of soda. This can be applied in spring and on grass if necessary.

The application of concentrates requires considerable care and knowledge, as, if overdone, it may do more harm than good. In the ordinary way, the bulk fertilizers are far safer to handle, although it is possible that the cultivation that goes with them does as much good as the manure itself.

A typical bulk fertilizer is farmyard manure, used fairly fresh on light soils, and "short" on clays. The usual practice is to open up a shallow trench 10 feet wide under the periphery of the crown,



let the manure lie through the winter and dig it in during the spring. On rough grass a light layer of cow manure well watered in is often useful as regards conifers such as Sequoia. Yew seems to prefer "cow" to "horse" manure.

Failure in old trees is frequently due to drought, and a good soaking often does much good. The soil should be loosened and the water run slowly, the amount naturally varying according to the tree, but a big specimen will take 100 gallons easily. Draining or digging operations should always be carried out with great caution around old trees as they are most sensitive to an alteration of the soil-water level.

\* \* \* \* \*

The moribund tree has no place in the garden, but any very old tree with pretensions to a natural appearance is worth looking after. Expensive treatment is not recommended. A good all-round cleaning up, pruning if it will stand it, a slow-acting nitrogenous manure dug in and a young tree planted to take its place in the future, are generally all that is required.

There are far too many people spending plenty of money every year on flowers and shrubs, who regard money spent on a tree as unwarrantable extravagance. If they devoted a moment's thought to the matter, they would realize that, over a period of years, there is nothing in the garden that asks less—and gives more.

## THE PLANTING AND ORDERING OF SEA-KALE.

A MANUSCRIPT AND A LEAFLET.

By A. SIGSTON THOMPSON, B.A.

BOTH the manuscript and the leaflet, of which photographs are reproduced here, came into the writer's possession affixed respectively to the inside of the back and front boards of LEONARD MEAGER'S *English Gardener*, the edition of 1688. Though Sea-kale is a native plant, and its uses have probably been known from the earliest times, there is hardly a reference to it in the books of the sixteenth or seventeenth century, which may account for the collecting of horticultural information on the subject by a previous owner of this book.

Of the history of the manuscript I can deduce very little. It is written on rough paper—probably foolscap in size, but afterwards trimmed to fold neatly into the book. There is a signature inside the front board—'Robt. Jones 1691'—and there can be little doubt on comparing the writing that Robert Jones was also the writer of this note on the growing of Sea-kale. On the subject of the printed note I can give no more information than appears in the note itself.

The manuscript (fig. 33) reads :

" For planting and ordering Sea Cale

" You must prepare a bed of good Earth of a light soil, and in March or April plant the seeds about two inches in the Earth, and about 10 or 12 inches each one from the other, and they will come up like a Radish. Keep them clear from weeds till about Michaelmas following and after the frost comes, the green will grow dead which you may cut off and before Christmas following make a frame of stones or timber round the bed about six inches high above the surface of the Earth and cover all the earth over with small round pebbles about 6 inches deep and the pebbles are always to lye over the ground. The latter end of January or February following you will perceive the Sea Cale appear with a small red and green head thro' the pebbles, then you are to continue the same still covered over with the pebbles in manner as you manage Asparagus until you think it fit to cut, it is generally cut when about 8 or 10 inches long from the surface of the Earth.

" The use of the pebbles to bleach it as you do Sallary and the Stock will be white as Sallary—the root is like a parsnip root, and when you cut it you are to take away the pebbles from the plant to the Earth and cut of the Cale just above the head of the root, but care must be taken not to cut off the head of the root for that kills the plant—when you have cut it, cover it again over with your pebbles, and it will in a fortnights time appear again above the pebbles, and in the same manner you may cut it once or twice more that Spring,

# For planting & ordering Ten C. B.

1<sup>st</sup> you must prepare a bed of good Earth of a light Soil, & in the  
 2<sup>d</sup> April plant the seeds about two inches in the Earth, & about  
 10 or 12 inches each one from the other, & in the middle of the  
 like a Gridiron. Keep the Earth firm round the seed, & when the  
 3<sup>d</sup> after the first coming, the green will grow round & when it has  
 cut off, & before the second following, make a frame of straw to  
 the top round the bed abt. 12 inches high above the surface of  
 the Earth & cover all the Earth over with small round pebbles, about  
 6 inches deep, and the pebbles are always to lie over the frame.  
 The last of January or Feb<sup>y</sup> following you will perceive the seeds  
 appear with a small red & green round the pebbles, then you  
 are to continue the same this covered with the pebbles in manner  
 as if managing them, until you think it fit to cut, this is generally cut  
 when about 8 or 10 inches long from the surface of the Earth.  
 The first of the pebbles is to blacken it as you do ordinary of the  
 stock will be with a bellows - the root is like a persons head  
 & when you cut it you are to take away the pebbles from the plant  
 & then in the middle of the bed cut about the head of the root, but you  
 must be taken care to cut off the head of the root for that part  
 the plant is - then you have cut it cover it again over with  
 pebbles, but within a fortnights time appears again above the  
 pebbles, and in the same manner you may cut it once or twice  
 more that Spring, but you ought not to cut it more than 3<sup>rd</sup>  
 and then leave it cutting for a first year, and afterwards  
 it will grow large - After if frost comes you ought to  
 cut or leave off the Cole & haul it away and the next year  
 you are to cut & manage it again in the same manner.  
 The bed will last as we believe a great many years, but as to  
 that point we have not got had the experience.  
 The pebbles are intended for seed must not be cut that season  
 if it is cut, it will not seed - Some have used Basins and  
 water to water it in summer time, but I never did it nor can  
 I think it of any benefit - Care must be taken when you cut  
 of Cole not to mix the Earth with the pebbles for it will injure it.  
 Some people at first sow the seeds in a bed of good Earth  
 and when they are grown abt. 2 or 3 inches they then transplant  
 y<sup>m</sup> into a bed of pebbles as before.

# DIRECTIONS

T O

## PROPAGATE the SEA or BEACH-CALE.

**M**AKE your Beds five Feet wide in the deepest and richest trash Mold, and trench it three Feet deep, that it may lay dry : Let the Top Foot of the Bed be made very fine ; then plant the Seed a Foot

or ten Inches square.

THE most speedy Way for the Seed's coming up, is to crack the Pod wherein the Seed is contained, which will likewise demonstrate whether the Seed you plant be good or not. Mark where you plant the Seeds, and keep it well water'd before it comes out of the Ground ; and so continue watering during the hot Months of the first Summer : Afterwards there needs no Water at all. You may plant the Seeds in *February, March, or April.*

THE second Year, you may cut the Sprouts five or six times : but first, before the Roots push forth the Sprouts, which will be very early in the Spring, and long before the natural Asparagus, cover your Beds with Sea-Pebbles six Inches deep, and, for Want of Pebbles, take Gravel, and wash the Grit off it, and lay it over the Beds, as before ; and as it pushes out of the Crown or Side of the Plant, keep it covered over with Pebbles or Gravel, round like a Hop-hill, till it is grown out the Length of your Finger ; then cut it, but be sure not to cut in too near the Root. If kept clean from Weeds, it will continue good, and supply you with Sprouts forty Years or upwards.

### *The Manner of Dressing it.*

TIE it up in little Bundles, and boil it in two Waters, putting a little Milk in the Water ; when soft, serve it up in a Water-Plate, adding Butter, Vinegar, Salt, and Pepper, according to your Taste. This is a most exquisite Dish, and far exceeds Asparagus, Broccoli, or any thing the Kitchen-Garden affords.

Sold by SAMUEL GRAY Seedsman in Pall Mall

but you ought not to cut it more than 3 times and then leave off cutting it for the first year, and afterwards it will grow large—After the frost comes you ought to cut or tear of the Cale and through it away and the next year you are to cut and manage it again in the same manner. The bed will hold (as we believe) a great many years, but as to that point, we have not yet had the experience.

“The part you intend for seed must not be cut that Season, if it is cut, it will not seed—some have mixt Brine with water to water it in Summer time, but I never did it nor can I think it of any service—Care must be taken when you cut the Cale not to mix the Earth with the pebbles for it will injure the Cale.

“Some people at first sow the seeds in a bed of good Earth and when they are grown abt 2 or 3 inches they then transplant them into a bed prepared as before.”

The printed leaflet (fig. 34) reads :

“ DIRECTIONS  
to  
Propagate the SEA or BEACH-CALE.

“MAKE your Beds five Feet wide in the deepest and richest fresh Mold, and trench it three Feet deep, that it may lay dry: Let the Top Foot of the Bed be made very fine; then plant the Seed a Foot or ten Inches square.

“THE most speedy Way for the Seed’s coming up, is to crack the Pod wherein the Seed is contained, which will likewise demonstrate whether the Seed you plant be good or not. Mark where you plant the Seeds, and keep it well water’d before it comes out of the Ground; and so continue watering during the hot Months of the first Summer: Afterwards there needs no Water at all. You may plant the Seeds in February, March, or April.

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“Sold by Samuel Gray Seedsman in Pall-Mall.”

## OENOTHERAS AT WISLEY, 1933-5.

THE genus *Oenothera*, as understood by its founder Linnæus, is a large one distributed widely in temperate North and South America, with one species in Tasmania. It contains annual, biennial, and perennial species, some of the latter being shrubby or sub-shrubby, and among the perennial species especially there is great diversity of habit. In flower and fruit structure, however, the differences are not great and, at least in the yellow-flowered, there would be no hesitancy on the part of any gardener in assigning a member of the genus to the 'Evening Primrose' group, and many of those with flowers of other colours would be readily recognized as belonging to it.

Some botanists who have studied the group have split *Oenothera* into several genera depending for differential characters largely upon the form of the stamens, the length of the calyx tube in comparison with the ovary, the nature of the stigma, and the arrangement of the ovules. It is, of course, usually easy to split up a large genus into small ones, but it is generally less easy to find agreement between botanists as to where the splitting should be done and how many pieces should be split off the old block. So here; and it is doubtful whether much good has been done in this instance even when the splitting has been accomplished. The value of a plant name lies primarily in enabling us to speak and write of a plant so that others may be sure of what we are speaking or writing about, and secondly, so far as the generic name goes, in indicating relationship to nearly like and presumably nearly related plants. In spite of the fact that, to quote Farrer in the *English Rock Garden* (ii, p. 7), "true, definite, finally-established species are not by any means easy to come by in a group of plants as polymorphic as a range of clouds at sundown," such as this group of plants with flowers very similar to the Evening Primrose, there can be no question of their general likeness to one another, and because of this we have retained for all mentioned below the generic name *Oenothera*.

The plants included in *Oenothera* may be found variously distributed in literature, especially American, between *Anogra*, *Lavauxia*, *Kneiffia*, *Megapterium*, *Taraxia*, *Sphaerostigma*, *Onagra*, *Galpisia*, *Gayophytum*, *Chylisma*, *Boisduvalia*, *Meriolix*, *Hartmannia*, *Pachylophus*, and a restricted *Oenothera*.

In the following account of plants under trial at Wisley where the generic name has acquired any considerable usage in horticultural literature we have indicated it in parentheses following the name we have retained.

Many of the *Oenotheras* are highly decorative plants. A few, like the well-known Evening Primrose, do not open their flowers until the evening, but this is not general. A partiality for sandy soil is, however, common; so, too, is a liking for a place in the sun. Several of the species are not dependably hardy, and some of those sent in for

trial failed to survive at Wisley on that account, among them *O. mexicana*, *O. speciosa rosea* and one of unknown provenance received under the name *O. Hopkinsii*.

For convenience the stocks received at Wisley for inclusion in the trial which began in 1933 may be divided into those usually raised from seed and those usually sold as plants.

*Species received as seed.*

Nine packets of seeds were received at the end of January 1934, and sown in a cold house, the seedlings pricked out, and about twenty plants of each planted out when large enough. The species and varieties represented were :

**Oenothera Lamarckiana** (*Onagra biennis*), the well-known Evening Primrose, a biennial species originating in North America but now naturalized in many sandy tracts in various parts of the temperate regions, including Great Britain. The seed came from Messrs. Herb of Naples, and was sent for comparison with seed of *O. Lamarckiana gigas* (*O. gigas*) from the same source. The latter also came from Messrs. Benary of Erfurt, and plants under the name *O. biennis Lamarckiana* from Messrs. Kelway of Langport.

There was little difference in these stocks either in habit or colour and size of flower. All grew to about 5 feet in height, branching at or above the base, and produced their 2-inch-wide pale yellow fragrant flowers which open at dusk in abundance.

*O. Lamarckiana* is too well known to need further description, but it is an extremely variable plant and many races (mutations, de Vries called them) may be picked out and with care bred true. It was very largely his observations upon this plant that led de Vries to propound his mutations theory of the origin of species.

**Oenothera trichocalyx compacta** was sent by Messrs. Watkins & Simpson of Drury Lane, W.C., and the type *O. trichocalyx* for comparison by Mr. T. Hay, V.M.H., by whom it was introduced and who showed it at Vincent Square in 1929, when it was awarded A.M.

The variety is a stock selected by Messrs. Watkins & Simpson for compact habit of growth and is otherwise similar to the type. It grows to about 2 feet in height and branches at and above the base. The leafy stems are terete and pale green ; leaves ovate-lanceolate, dark greyish-green with pale midribs and veins, somewhat hairy, crenate and at the base toothed ; petioles  $\frac{1}{2}$  to 1 inch long ; flowers borne singly in the leaf axils of a long raceme, sessile ; corolla about 2 inches across, cup shaped, pure white except at the sulphur base of the petals, calyx tube  $1\frac{1}{4}$  inch long, whitish ; stamens and stigma cream. It flowers very freely in July. *O. trichocalyx* is a native of the Colorado and Mohave deserts, U.S.A., and is an annual.

**Oenothera campylocalyx** is a native of Peru and was introduced by Miss Stafford. The seed came from Messrs. Hurst & Son of Houndsditch, E.C. The plant is new to British gardens, grows about 2 feet tall, with several roundish, pale green hairy branches from the base, and has slightly hairy, sessile, lanceolate, medium green, broadly

serrate leaves. The flowers, freely produced in July, are arranged as in *O. Lamarchiana* and *O. trichocalyx*, but are dull orange-red, basin shaped, about  $1\frac{1}{2}$  inch broad, and have a deep red hairy calyx tube about  $\frac{7}{10}$  inch long sharply curved for a quarter of its length. The heavy green capsules perhaps detract from its garden value.

**Oenothera mexicana** (*O. rosea*, *Hartmannia tetraptera*) came from Messrs. Benary of Erfurt. It is a native of Texas and New Mexico, of prostrate habit, the branching reddish stems creeping over the soil surface and carpeting it with dark green, slightly hairy, ovate-lanceolate, deeply serrate leaves. The bright rose saucer-shaped flowers are freely produced in July in the leaf axils and rise slightly from among the foliage each on a downy red pedicel, a quarter of an inch long, above which is the hairy capsule and then the calyx tube as long as the pedicel.

**Oenothera acaulis** came from Messrs. Benary and plants under one of its many synonyms, *O. taraxacifolia*, from Messrs. Kelway. It is a perennial plant from Chile of spreading habit, hairy, with bright reddish, stout, semi-decumbent stems and deeply cut dark green dandelion-like foliage. The axillary sessile flowers are about 3 inches in diameter, basin shaped, very pale pink, sessile, but lifted out of the foliage by the 4-inch faintly tinged calyx tube. As the flowers die they become dull red. Flowering in July.

**Oenothera triloba**, also from Messrs. Benary, came too as plants from Messrs. Ben Wells of Merstham. Messrs. Benary's name for it was *O. acaulis aurea*. This forms a compact rosette with spreading glabrous foliage, reddish towards the base, much like that of a dandelion. Flowers are borne singly and droop somewhat; they are about 2 inches across, basin shaped, rich sulphur-yellow, with calyx tubes 4 or 5 inches long. Flowering in July.

*Species received as plants.*

**Oenothera Nuttallii** (*O. tanacetifolia*), a species from Western N. America received from Messrs. Wells and Messrs. Ruys of Dedemsvaart, Holland. A compact rosette plant with grey-green, downy, broad-toothed leaves from 5 to 8 inches long and 1 inch wide. The bright yellow flowers are cup shaped, about 1 inch wide and lifted among the leaves by the 2-inch-long calyx tubes. Flowering in June. The plant spreads by underground runners, but is rarely long-lived in English gardens.

**Oenothera speciosa**, a North American species from Montana, came from Messrs. Wells, Ruys, and Kelway. It is of erect, bushy habit up to 2 feet in height, with pale green downy stems branched well above the base and grey-green downy foliage toothed along the wavy margins. The flowers are borne in the leaf axils, and have  $\frac{3}{4}$ -inch calyx tubes. They are flat basin shaped, about  $2\frac{1}{2}$  inches wide and pure white with pale greenish-cream centres. As they fade they become rosy. Flowering in July.

**Oenothera missouriensis** (*Megapterium missouriense*, *Oenothera macrocarpa*). A.M. July 22, 1935. Sent by Messrs. Ruys, Wells, Watkins & Simpson, Prichard of Christchurch, Hants, and Kelway.



Plant of spreading habit, with reddish semi-decumbent stems up to 6 or 9 inches. Leaves entire, lanceolate, bright dark green with prominent whitish midribs and veins. Flowers axillary, with pale reddish slender calyx tubes 4 inches long, broad funnel shaped,  $2\frac{1}{4}$  to  $2\frac{1}{2}$  inches wide, bright sulphur, the buds often spotted dull red. Capsules bright green with four very wide wings. Flowering in July. It is a native of Missouri and Nebraska.

**Oenothera odorata** (H.C. July 5, 1935) was sent by Messrs. Wells and Messrs. Watkins & Simpson. It is a native of Patagonia and is of rather loose spreading habit, with slender, erect, hairy, red-tinged stems, sessile, dark green, lanceolate-acuminate leaves with wavy margins and apricot-yellow flowers in a raceme. The corolla is basin shaped and the dull reddish-brown calyx tube about 1 inch long. Flowering in July. There is a pale yellow form to which the name *sulphurea* has been given. An evening-flowering species.

**Oenothera Bertolonii**, from Messrs. Wells, is of similar habit, but with branched grey-green red-tinged stems, remotely toothed, dull grey-green leaves with prominent white midribs and bright sulphur-yellow flowers about 2 inches across, the calyx tubes of which are about  $\frac{1}{2}$  inch long. Flowering in July.

The name and provenance of this species are in doubt, but the plant appears to be nearly related to the Chilean Flor de la noche, *O. Berteriana*.

\* \* \* \* \*

The remaining plants in the trial belonged to the group of perennial plants with stems somewhat woody at the base and with usually terminal clusters of bright yellow 'Evening Primrose' flowers. In this group there is much confusion among names, not so much in synonyms arising from botanical enterprise, but from misunderstanding of identity and mixing up of names in gardens. We have tried in what follows to define the species and varieties under their proper names, and have also endeavoured to indicate their garden value. Several of the plants in this group are liable to be attacked by the Phlox eelworm, and where Phloxes have suffered from the attack of this pest it is unwise to plant these *Oenotheras*.

They may for the most part be grouped round *O. fruticosa*.

**Oenothera fruticosa** (A.M. July 5, 1935) (*Kneiffia fruticosa*) came to the trial from Mr. Chittenden's garden and as *O. fruticosa Youngii* from Messrs. Kelway (but see below). It is a plant of about 2 feet in height, with many reddish-brown branches springing from among the basal leaves; leaves lanceolate, sessile, very dark green; flowers in terminal clusters on short ( $\frac{1}{2}$  inch) pale green pedicels. The bud is tinged red, the corolla saucer shaped,  $1\frac{1}{4}$  inch across, bright yellow, the calyx tube reddish,  $\frac{3}{10}$  inch long, capsule tinged red on ribs. Flowering in late June and more or less continuously till autumn. A very useful border plant, native of Nova Scotia.

Three other sendings, named respectively *O. fruticosa* from Messrs. Ruys, *O. fruticosa major* from Messrs. Prichard, and *O. fruticosa Youngii* from Messrs. Wells, differed in minor details from *O. fruticosa* type and were probably only inferior seedlings from it.

*Oenothera fruticosa Youngii* came correctly named from Messrs. Ruys, who in error sent the same plant as *O. glauca*. *O. fruticosa Youngii* has a less pointed bud than *O. fruticosa* and is rather dwarfer and more compact.

*Oenothera fruticosa W. Cuthbertson* (A.M. July 5, 1935) came from Mr. T. Smith of Newry, Co. Down, and Messrs. Wells, and also under the name of *O. Eldorado* from Messrs. Prichard. This is only 12 to 15 inches tall, making a bushy plant with pale red, hairy, erect, wiry, branched stems; leaves dark dull green, ovate-lanceolate; flowers sessile, rather crowded, bright pale yellow,  $1\frac{1}{2}$  inch in diameter, basin shaped, calyx tube  $\frac{3}{10}$  inch. Flowering in early July.

*Oenothera fruticosa major*, from Messrs. Wells, was as tall as but more compact than the type, with only a slight tinge of red in the flowers and fruits, brown stems and otherwise much like the type, of which it is no doubt a seedling.

*Oenothera glauca Fraseri* (*O. Fraseri*, *Kneiffia glauca Fraseri*), from Messrs. Ruys, was of similar habit to *O. fruticosa*, about 20 inches in height, with reddish-brown stems, sessile dark green ovate-lanceolate leaves, flowers slightly tinged red in bud and on the calyx tube, corolla basin shaped,  $1\frac{1}{2}$  inch diameter, bright yellow. Flowering in late July. It is a native of Virginia.

*O. glauca Fraseri*, from Messrs. Wells, and *O. Fraseri* from Mr. T. Smith, differed slightly from the *O. glauca Fraseri* in the amount of red on the bud, in the length of the capsule and in the habit of the plant, but were evidently closely related.

*Oenothera Pilgrimii*, from Messrs. Prichard, also flowering in late June, was of stiff, compact habit, about 15 inches tall, with brownish stems branched near the top, broadly lanceolate leaves, and saucer-shaped bright yellow flowers  $1\frac{1}{4}$  inch in diameter. Said to have been raised by Mr. Pilgrim of Cheltenham and introduced by Mr. Robert Parker of Tooting, and of *O. fruticosa* connexion.

*Oenothera serotina*, from Mr. T. Smith, grew only 9 to 12 inches tall, with many brownish branches from the base and above; leaves entire, lanceolate, very dark green, with some hairs on upper surface. It differed from all the foregoing in having glabrous corolla tubes and ovaries and bright green flower buds and fruits. Late June flowering.

*Oenothera riparia* (A.M. July 5, 1935) (*Kneiffia riparia*), from Messrs. Wells, has many slender stems slightly tinged with red, tending to sprawl and making a good rock-garden plant; leaves linear to linear lanceolate, dark green; flowers clustered, buds slightly tinged red, calyx tube short, hairy, corolla basin shaped,  $1\frac{1}{2}$  inch across, bright pale yellow. Flowering from late June onwards.

*Oenothera pumila* (*Kneiffia pumila*), from Messrs. Wells, an erect plant about 9 to 12 inches tall, of slender growth, with zigzag stems bearing flowers at every angle in succession; leaves small, lanceolate, dark green; flowers cup shaped,  $\frac{3}{8}$  inch diameter, bright buttercup-yellow. A good rock plant. Flowering in early June. A Newfoundland plant.

## CONTRIBUTIONS FROM THE WISLEY LABORATORY.

LXXVI.—THE INK DISEASE (OR BULB SCAB) OF *IRIS RETICULATA*  
CAUSED BY *MYSTROSPORIUM ADUSTUM* Massee.

By D. E. GREEN, M.Sc., Mycologist.

## INTRODUCTION.

MANY years have passed since attention was drawn to the occurrence of black markings on the bulbs of *Iris reticulata*. The first statement that these marks were due to a fungus disease is to be found in the published notes of a lecture by Professor M. FOSTER.\* He wrote :

“The cultivation of the *reticulata* group has chiefly to be directed towards combating a disease in the form of a minute fungus, which attacks the bulbs when left in the ground, and the presence of which, in the dry bulb, may be recognised by the coats being splashed with black as if marked with ink. When this disease makes its appearance the foliage prematurely withers, and the bulb speedily rots away, leaving behind an imperfect husk filled with black powder. In any garden to which the fungus has gained access, bulbs left in the ground soon perish ; what one year is a beautiful clump full of bloom, may next year be represented by one or two flowers only, or not even by that. I am by principle adverse to too much meddling in the garden, but through successive heavy losses, I have been driven to move all my *reticulatas* every year. I take the bulbs up as soon as the foliage has died down, keep them for a while in dry sand, and, before I replant them in fresh ground in July, go carefully over them all, removing the coats which by their black patches show signs of the fungus, and placing all really diseased bulbs in a reserve ground by themselves. By this method I find that I largely diminish the disease, though I have not as yet wholly stamped it out. Sometimes one variety, sometimes another, seems to succumb soonest to the enemy ; I do not find that any one kind permanently resists attack, but have in turn lost patches of each kind. If I fancy one kind is disease-proof because it stands several years, I am undeceived at last.”

The first record of the fungus concerned seems to be that of MASSEE,† who in 1899 announced the cause of the blackening to be a fungus which he named *Mystrosporium adustum*. In this record

\* FOSTER, M. “Bulbous Irises,” by Prof. Michael Foster, Sec. R.S., F.R.H.S., etc. (R.H.S. 1893), p. 14.

† MASSEE, G. “Iris Bulbs Diseased,” Gard. Chron., 1899, vol. 1, p. 412.

MASSEE gives a brief description of the symptoms and of the fungus, and suggests a method for controlling the trouble. In the same year C. WOLLEY DOD \* wrote :

"It is an exception to find a garden free from it. I have always called it the Ink mildew because the bulbs attacked by it look as if they had been soaked in ink ; but a month later nothing is to be found but the empty tunic containing a little black powder. The natural increase of these Irises in my garden is about threefold annually, but nearly two-thirds are always destroyed by this disease. If planted in quite new soil it is sometimes three or four years before the mildew reaches them, but it always finds them out sooner or later. I grow many species of this Iris but have never noticed this black mildew on any other. . . . Mr. W. Thompson of Ipswich once told me that he thought deep planting helped to preserve the bulbs from it."

Since these records, apart from occasional mention in Horticultural Reports, little information on the disease has been available. The writer, however, was fortunate in obtaining some information gathered by Mr. W. A. MOORE, of the Ministry of Agriculture's Plant Pathological Laboratory, during his visit to Holland in 1928. Mr. MOORE has kindly allowed the publication of the following extract from his report :

"Iris bulbs are not grown to any great extent in Holland. One grower was visited who stated that he had great difficulty in keeping his stocks of *Iris reticulata* free from a disease which caused black markings on the bulbs and which proved on examination to be identical with that known in the trade in England as Ink Disease, and presumed to be caused by *Mystrosporium adustum*. This disease is the most difficult factor in growing *Iris reticulata*, but other species are much more resistant. The grower in question lifts his bulbs at the usual time, dries them, dips them for 1 hour in a 5 % (?) solution of Uspulun, dries again, stores in the normal manner and replants in September. The treatment with Uspulun, however, has not given very satisfactory results, and the only feasible method of control is the elimination and destruction of diseased bulbs."

It is doubtful whether the disease was well known in Holland even in 1928, for much later VAN POETEREN † records that Ink disease on *Iris reticulata* bulbs was sent to him for the first time in 1933. In the writer's opinion, judging from the freedom from Ink of Dutch samples of *Iris reticulata* bulbs, the disease is still not common in Holland.

The name Ink also appears to be a better term than mildew or bulb scab, because it is an apt term for the symptoms most easily noticed

\* WOLLEY DOD, C. "*Iris reticulata* disease," Gard. Chron., 1899, vol. 2, p. 14.

† VAN POETEREN. "Verslagen en Mededeelingen van den Plantenziektenkundigen Dienst te Wageningen," No. 76 (1934).



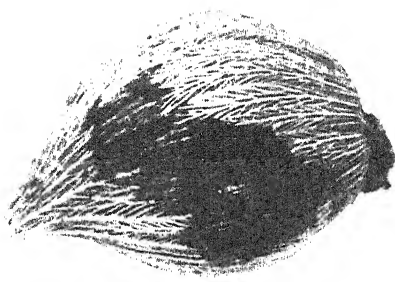
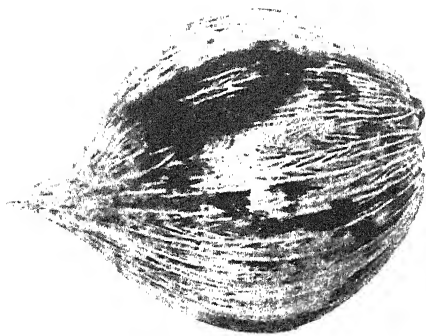


FIG. 35.—INK DISEASE OF IRIS RETICULATA.  
Middle bulb shows disease invading the flesh.

(i.e. ink-black patches on the outer scale) and it seems to be the term most usually employed in referring to this disease.

In some quarters even now the symptoms are thought harmless and not in any way detrimental to the bulbs or likely to interfere with flower production. On the other hand, questions are often received, both from Fellows of the Society and from seedsmen, asking whether the black markings on *Iris reticulata* bulbs are undesirable. For this reason it was decided to carry out some experiments to find out whether the blackened scales indicated any danger to the health of the bulbs.

#### THE SYMPTOMS.

The disease is seen on the outer (reticulate) scales of *Iris reticulata* as inky patches. These discoloured areas are composed of a black crust which is made up of the remains of dead cells mixed with fungal threads (hyphae). In fresh specimens many dark brown spores can be seen mixed up with the debris in the blackened areas, but in well-dried bulbs spores are often hard to find. The black patches are irregular in shape, and the discoloration in some cases occurs over the greater part of the outer scale surface. Sometimes the scale shows a lesion, the edges of which bear a charred appearance. When this occurs it is almost certain that the damage has extended into the inner fleshy part of the bulb. The degree of infection thus varies. It may be only a superficial black crust on the outer scales, or it may have penetrated deeper to injure the inner fleshy bulb tissue (fig. 35).

On the fleshy portion the disease takes the form of coal-black, slightly sunken areas with well-defined edges. These black craters generally have slightly raised yellow margins. Smaller spots may show black, but not yet sunken. A severely attacked bulb may shrink a little at the affected part, especially if the injury is situated at the top or nose of the bulb. It has been noticed that in affected stocks some bulbs show blackening around the basal plate, and in some cases this discoloration extends about  $\frac{1}{8}$  inch into the bulb.\*

In some slightly infected bulbs the fleshy scale may bear only very small (pin-point) yellow spots, which can be detected only by examination with a hand-lens. Such diseased bulbs are most difficult to detect, and for this reason it is extremely difficult to pick really clean bulbs from an infected stock.

#### THE PARASITIC FUNGUS CONCERNED.

The disease is caused by the fungus *Mystrosporium adustum* Massee. It grows in the tough outer scale and in the inner fleshy part of *Iris reticulata* bulbs, causing black discoloration in the affected tissues. The thin black crust on the outer scale does not indicate any attempt on the part of the fungus to form a resting body for future

\* This should not be confused with the greyish sunken and slightly shrunken area which occurs around the basal part in bulbs which have been attacked by a species of *Penicillium* during storage. In such bulbs removal of the scale will often reveal the green mould typical of that fungus.

germination (such as the flat black crust-like sclerotia seen on Daffodil bulbs affected by the fungus of "Smoulder" disease), but is merely a blackened crust composed of the remains of cells mingled with

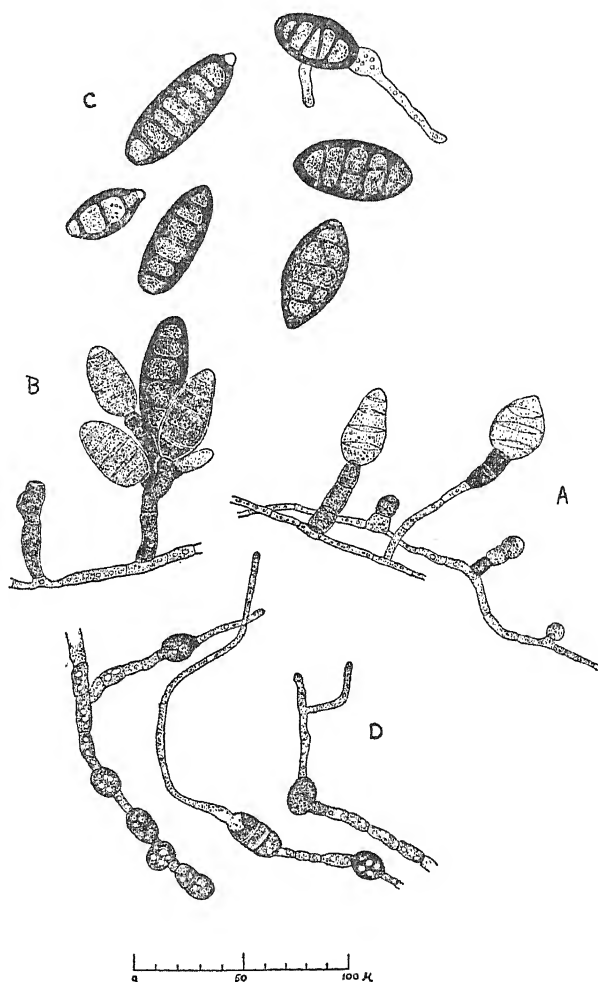


FIG. 36.—*MYSTROSPORIUM ADUSTUM* Massee.

A. Beginning of spore formation. B. Spore cluster and (left) bare conidiophore. C. Mature spores, one germinating. D. Old hyphae and spore-like cells with thickened walls.

fragments of fungal threads. Nevertheless, these pieces of fungal hyphae retain the power to grow for some time.

The fungus produces spores at the ends of certain of its aerial hyphae, which become short, thick and dark brown. In time most, if not all, of the threads take on this dark colour, so that cultures of the fungus gradually turn black.

The spores may be formed singly (fig. 36, A) or in a cluster on a spore-bearing hypha (fig. 36, B). The spores when young are colourless, but



gradually change to very dark brown and finally almost black. They are oval to oblong, with obtuse ends, thick-walled, 5- to 7-septate, divided by cell walls transversely, with occasional longitudinal septa (fig. 36, c). They vary greatly in size, measuring between  $37\mu$  and  $82\mu$  in length, and between  $18\mu$  and  $26\mu$  in breadth at the widest point, averaging  $56\mu$  in length and  $22\mu$  in breadth (100 measured). Apart from these spores no other type of fructification has been observed during this investigation either on attacked bulbs or in cultures of the fungus kept for four years.

From the dry outer scales the fungus for various reasons is sometimes difficult to isolate, but from the black areas in the fleshy part isolation is not difficult. It grows well in ordinary culture media, and has been grown in the laboratory at  $20^{\circ}$  C. ( $68^{\circ}$  F.) on Prune Agar (pH 6.0), on Nutrient Agar (pH 6.9), and on Potato plugs. On all these there is a steady cushion-like growth of short white aerial hyphae, but on Prune Agar the growth is very white and has a frothy appearance. After a week there is a greenish-black coloration of the media. The blackening begins from the centre and progresses outwards until most of the culture is quite black, with a surface layer of white frothy-looking hyphae. The discoloration appears to commence with spore formation, and the blackening seems to be a fair indication that spores are being formed.

There is a slow but steady growth at as low a temperature as  $4^{\circ}$  C. ( $39^{\circ}$  F.), although spore formation is considerably delayed at low temperatures.

Fresh spores germinate freely in distilled water in 18 to 24 hours. All the cells of a spore are capable of germination, but the end cells are usually the first to produce germ tubes (fig. 36, c).

As the culture ages most of the hyphal cells become short, thick-walled, and filled with reserve substances, but some cells in particular become swollen and very dense. These cells are much like chlamydo-spores, and on being placed in suitable conditions produce germ tubes in much the same manner as the typical spores (fig. 36, d).

#### TESTS ON THE VIABILITY OF OLD CULTURES.

Some tests were carried out to ascertain how long the spores retained their ability to germinate. Old test-tube cultures kept in the laboratory for periods of 2,  $2\frac{1}{2}$  and 4 years provided abundant material for these tests. Samples of spores of different ages were placed in distilled water and also inoculated into fresh tubes of Prune Agar—all were then incubated at  $20^{\circ}$  C. and examined every day for 14 days. The spores from the 4 years and  $2\frac{1}{2}$  years old cultures showed no growth in Prune Agar, nor could any spore from these cultures be found germinating in distilled water. The spores from the 2-years-old culture, however, quickly made good growth in Prune Agar and had produced abundant fresh spores on the tenth day. They also germinated fairly well in distilled water, but the actual germination

was probably only about 25 per cent. Even the old hyphae from this 2-years-old culture commenced to grow branches. It is obvious that the fungus retains its viability for a long period, and that the spores even when kept dry do not die for a considerable time.

#### EFFECT ON THE GROWING PLANT.

(a) *The Foliage*.—The symptoms on the dormant bulbs of *Iris reticulata* have been described, and on the growing plant the fungus still confines its activities to the underground parts of the plant. In this investigation under ordinary garden conditions no natural infection of the foliage has been observed. In a test on healthy foliage the fungus when inoculated into leaves quickly killed them and produced spores near the point of inoculation, but did not spread far from that area. Spores placed on unwounded leaves did not injure them even under humid conditions made by covering the plant with a bell-jar. The foliage of diseased bulbs is, nevertheless, killed by the fact of the bulb below being destroyed, and when the leaves begin to lose their healthy appearance a very slight pull usually lifts them out of the ground.

It is worthy of mention that the fungus appears to affect plants of Dutch Iris in exactly the opposite manner. In these plants the foliage is sometimes attacked to such an extent as to become blackened and withered (fig. 37). On the other hand, in the writer's experience the bulbs of Dutch Iris are not attacked by *Mystrosporium adustum*.

(b) *The Bulbs*.—The bulbs of *Iris reticulata* are quickly attacked and destroyed by a fresh culture of the fungus without previous wounding of any sort. Experiments carried out have given abundant evidence of this fact.

*Experiment 1*.—This experiment was carried out on *I. reticulata* bulbs planted in sterilized soil in 6-inch pots, which were then plunged in clean ashes in a cold frame. Each pot contained four healthy bulbs, all four having had a portion of a young culture of *M. adustum* inserted underneath the outer scale, but two out of the four bulbs having been wounded just underneath the piece of culture. A control pot contained untreated bulbs only. The effect on all the infected bulbs was easily noticeable. At the time when the control bulbs were looking extremely healthy and about to open their flowers, all the infected bulbs had produced plants obviously diseased, with stunted yellow leaves, and none produced any flowers. On lifting, the infected bulbs were generally rotten and worthless, and there was no difference between those wounded or those unwounded when infected. It was clear that *M. adustum* was capable of destroying the bulbs whether they had been wounded or not.

The progeny of the plants from the uninfected control pot were good and clean, but those from infected ones were small, blackened, and few in number.

*Experiment 2*.—Bulbs were planted under the same conditions as in Experiment 1, but this time two bulbs in each pot of sterilized soil.



FIG. 37.—BLACK SPOTS AND PATCHES ON FOLIAGE OF DUTCH IRIS RESULTING FROM ATTACK OF MYXOSPORIUM ADUSTUM.

[To face p. 172.

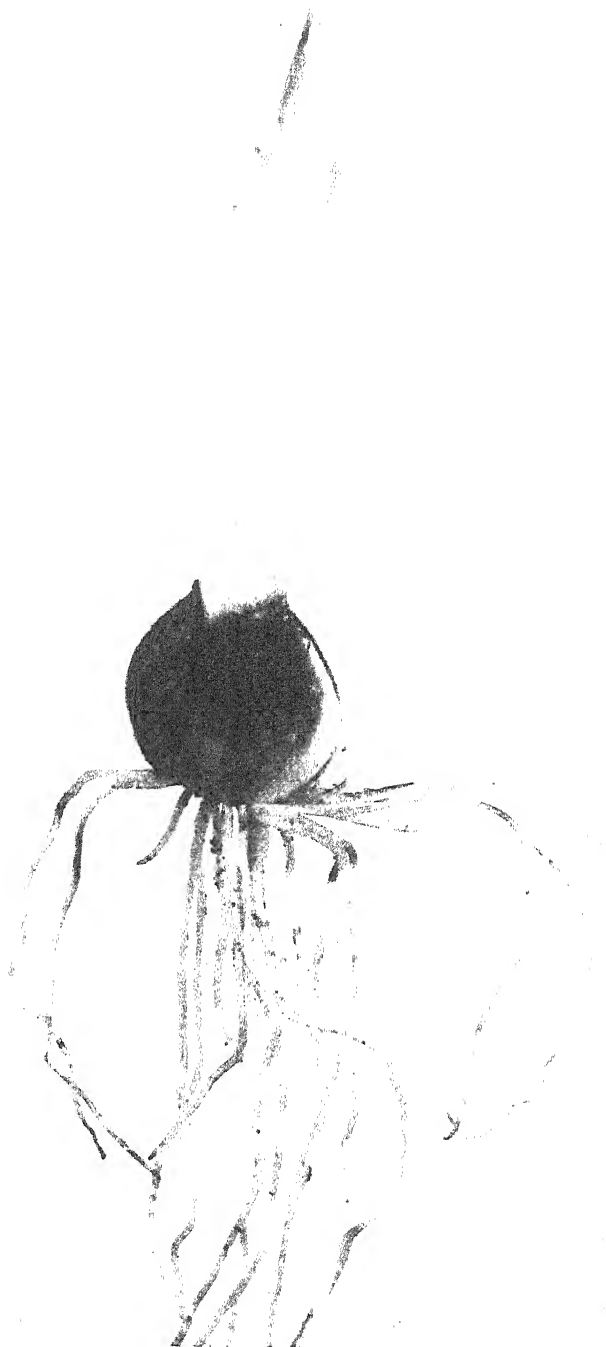


FIG. 38.—UNWOUNDED BULB OF *IRIS RETICULATA* INOCULATED WITH YOUNG CULTURE OF *MYSTROSPORIUM ADUSTUM*, PLANTED, AND LIFTED AFTER TWO MONTHS.



FIG. 39.—UNWOUNDED BULB OF *IRIS RETICULATA* INOCULATED WITH YOUNG CULTURE OF *MYSTROSPORIUM ADUSTUM*, PLANTED, AND LIFTED AFTER THREE MONTHS.

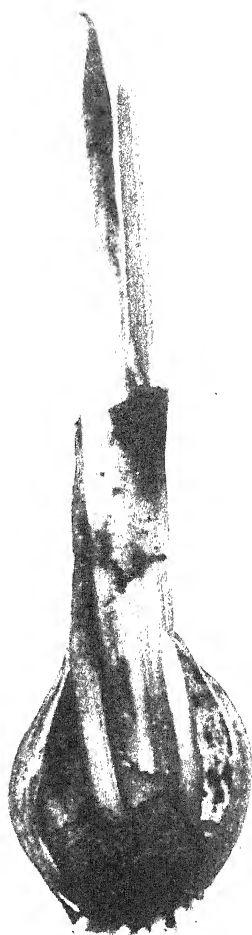


FIG. 40.—UNWOUNDED BULB OF *IRIS RETICULATA* INOCULATED WITH YOUNG CULTURE OF *MYSTROSPORIUM ADUSTUM*, PLANTED, AND LIFTED AFTER FOUR MONTHS.

[To face p. 173.]

Each pot contained two bulbs, one naturally diseased which had not been tampered with in any way, but which bore black marks typical of Ink disease in its outer scale, while the other was a selected healthy bulb, under the outer scale of which a piece of culture of *Mystrosporium* had been laid (*i.e.* artificial infection). Every month the bulbs from a pot were lifted and examined. After two months, an examination of plants in a pot revealed the naturally infected bulb to be little the worse, but the artificially infected one showed a very blackened area on the inner fleshy tissue (fig. 38). After three months, examination of another pot showed the naturally infected bulb to be bearing signs of attack on the inner portion, but as yet not badly affected. The artificially infected bulb had a very black and rotten area about  $\frac{1}{2}$  inch in diameter (fig. 39), while some roots growing inside the scale were also black and were being killed. After four months similar examinations of several pots showed no severe damage to naturally infected bulbs, but artificially infected ones were now in a bad condition. In most instances about half the bulb was a blackened rotten mass full of spores of the fungus, the rot extending into and attacking the base of the flower stem (fig. 40). Secondary organisms (both fungi and bacteria) were present, and these no doubt accelerate the destruction of bulbs after the initial damage has been done by *Mystrosporium*. In the experiment at the base of two plants a slight blackening of the first white sheath leaves was observed, and spores of *M. adustum* were observed at these places. This was the only place in which the fungus was seen above the ground, but even so the green leaves were not directly attacked.

Growth proceeded in remaining plants and noticeable differences soon appeared. All the artificially infected bulbs produced stunted and generally poor foliage. Not one flowered, and in most instances the foliage, after reaching about 4 inches in height, yellowed off and withered away. Naturally diseased bulbs all produced a flower, but their foliage could not compare for health and vigour with that of selected clean and healthy bulbs in the control pots. In each pot the result showed that naturally infected bulbs were not severely attacked and all flowered, but the bulbs infected with a fresh culture of the fungus were rapidly and completely destroyed, causing the foliage to yellow and wither away before flowering time. At lifting time the progeny from the naturally infected bulbs showed external symptoms varying from very slightly to severely blackened scales, with the bulbs inside ranging from those almost clean to those with large black lesions, especially near the top or neck part. In the case of the artificially infected bulbs nothing remained to be harvested, as they had entirely rotted away.

*Experiment 3.*—Selected healthy bulbs were planted in (a) sterilized soil; (b) sterilized soil containing chopped-up diseased bulbs and scales; (c) sterilized soil containing fresh mycelium and spores from a young culture of the fungus. In (a) the plants grew and flowered excellently, in (b) no fault could be found with the flowering, but when harvested

the progeny were all considerably blackened on the outer scales, and most of them had lesions on the fleshy under-part as well. The plants in (c) were stunted and unhealthy. Yellowing and dying took place when they were about 4 inches high, no flowers were produced and the bulbs were found to be totally destroyed at lifting time.

*Experiment 4.*—In this experiment the sheath leaves of plants from selected healthy bulbs growing in sterilized soil were inoculated with fresh mycelium from a culture. The plants did not appear to be affected and flowered well, but on harvesting the bulbs were more or less diseased and all the offsets were blackened.

The fungus does not appear to attack the foliage, but enters the outer sheath leaves, and establishes itself in the outer scale, from which it gradually penetrates to the inner portion of the bulb. This point must have an important bearing on the necessity of lifting suspected stocks and drying them off as soon as possible, so as to reduce the vitality of the fungus and check its penetration of the fleshy bulb.

It may be that where the outer scale only is affected some control is obtained by proper drying off, and the fungus if not killed is considerably weakened so that its subsequent activity is very greatly impaired. In addition, despite the fact that it can grow at 40° F., this growth is slow, and there can be no doubt that during the winter months the low soil temperatures check it considerably.

The results from these and other experiments showed that although in many instances when present in the bulb scales the fungus does not kill quickly, yet it is always a potential danger, and under favourable conditions may cause much damage. Infection with a young vigorous culture of the fungus proves this. Its presence in a stock is undesirable, and for this reason some simple methods of control were attempted.

Flowers of Sulphur placed around the bulbs on planting did not check the trouble, and the progeny were quite as diseased as the mother bulbs.

Diseased bulbs were soaked in 2 per cent. Formalin solution (1 pint 38/40 per cent. Commercial Formaldehyde to 49 pints water) for periods of 1, 2, 3 and 4 hours, allowed to dry, and then planted in sterilized soil. The treatment did not affect the subsequent growth, although the treated bulbs did not appear above ground until about a week after untreated ones. Flower production was good, but on lifting practically all the young bulbs showed typical black lesions on their fleshy tissues.

Similarly with diseased bulbs from which all the outer scales were stripped this soaking in 2 per cent. Formalin failed to check the fungus, which spread to the young bulbs in all cases. The result was not surprising, as this difficulty of curing bulbs or corms already diseased has been met with during previous experiments on *Gladiolus* diseases. Despite many precautions, where a bulb infected with Ink disease has been planted, the resulting progeny have shown deterioration and a steady increase of the blackening characteristic of the disease. The black lesions on the offsets were almost always situated near the top



of the young bulb. Even the cutting out of lesions on slightly affected bulbs is not practicable because, as already mentioned, the smallest points of infection are hardly discernible. Nevertheless, one remedy tried was that in which the black specks were cut out with a sharp scalpel and the bulbs afterwards soaked in 2 per cent. Formalin solution for 1 hour. Disease still persisted on a fair percentage of the progeny, so that even with such treatment the stock should be isolated and grown apart from any healthy stock until they can be passed as clean and sound.

#### CONCLUSIONS.

The experiments have supported previous experience in the open garden which indicated that batches of *Iris reticulata* bulbs showing inky markings when planted slowly decreased in number. In the growing season the foliage of those obviously unhealthy if given a slight pull came up and showed rotten at the base. This occurs much sooner in the garden than in similar infected bulbs growing in sterilized soil. The conclusion is that the bulb injured by the Ink fungus is more quickly rotted by secondary organisms of decay in unsterilized soil than in the much cleaner sterilized soil.

It is improbable that any simple treatment will cure a bulb once the Ink fungus has affected the fleshy part. Even if, as already indicated, an attempt is made to remove the black areas, the stock should be isolated. It seems that the safest method is to destroy bulbs which have black areas on the inner fleshy portion and to remove any outer scales showing black patches.

There can be little doubt that the methods of Professor FOSTER, reprinted earlier in this paper, and also those advocated later by DYKES,\* to lift and examine *Iris reticulata* bulbs every 2 years, are good advice.

The author's thanks are due to Mr. W. C. MOORE, of the Ministry of Agriculture and Fisheries Laboratory, for help and permission to publish the extract given on p. 168, and to Mr. N. K. GOULD of Wisley Laboratory for taking the photographs.

\* DYKES, W. R. Handbook of Garden Irises, 1924, and Gard. Chron., March 18, 1916, p. 155.

## PLANTS TO WHICH AWARDS HAVE BEEN MADE IN 1935-6.

**Acacia Baileyana.** F.C.C. February 11, 1936. From W. Ingham Whitaker, Esq., Lymington. *Acacia Baileyana*, a native of New South Wales and Queensland, is one of the most beautiful species and, in the British Isles, one of the hardiest. Unfortunately, it is unsuitable for outdoor planting except in the south and west, where it may reach a height of 20 feet in the shelter of a wall. The slender racemes of bright yellow flowers are produced freely from the axils of finely bipinnate, glaucous-grey leaves.

**Aloe variegata.** A.M. February 25, 1936. From Mrs. Vera Higgins, Croydon. A pretty species well suited to pot cultivation, with stout, triangular, silver-blotched leaves arranged in three oblique ranks. The slender, 15-inch scapes rise well above the foliage and bear pendent, tubular flowers of salmon-pink, striped with pale olive-green. It is figured at t. 513 of the Botanical Magazine (1801), the accompanying text giving the following cultural hint: "we frequently see it nursed up with great care by those who have only the convenience of a parlour window, and succeed better with such than in the green-houses of many."

**Cypripedium** × 'Charmaine,' Westonbirt var. A.M. February 25, 1936. From Messrs. H. G. Alexander, Tetbury. A large flower obtained by crossing *C.* × 'Hestia' with *C.* × 'Marne.' The dorsal sepal is white with a greenish base and blackish spotting on the central area. The petals and labellum are greenish-yellow with dark brown markings.

**Cypripedium** × 'Ganges' var. 'Catherine Armstrong.' A.M. February 25, 1936. From Messrs. Armstrong & Brown, Tunbridge Wells. *C.* × 'Hecuba' and *C.* × 'Hesketh.' This flower is remarkable for its rich colouring. The dorsal sepal is purple with a crimson-purple base and a white margin, while the ventral sepal is unusually developed. The petals and labellum are mahogany-red and have a shining surface.

**Cypripedium** × 'Tunbridge.' A.M. February 11, 1936. From Messrs. Armstrong & Brown, Tunbridge Wells. A large and boldly-formed flower. The white dorsal sepal has a greenish base and the central area is spotted with purple. Labellum and petals brownish yellow. *C.* × 'Chardmoore' × *C.* × 'Christopher.'

**Dahlias.** See p. 179.

**Freesia 'Renown.'** A.M. February 25, 1936. From Mr. G. H. Dalrymple, Bartley. A seedling from *Freesia* 'Beauty.' Height 2 feet; flowers large, sweetly scented, 6 to 8 to the spike, 5 or 6 out at a time, cream, throat tinged with orange, reverse faintly tinged pale mauve.



FIG. 41.—*GENTIANA SINO-ORNATA* ON THE ROCK GARDEN AT WISLEY, OCTOBER 1935.



FIG. 42.—A PATH IN THE WOOD AT WISLEY WITH TRILLIUMS, LILIUM GIGANTEUM, PRIMULA JAPONICA, ETC.

[To face p. 177.

**Homeria Comptonii.** A.M. February 25, 1936. From T. T. Barnard, Esq., Wareham. A small and graceful South African Irid, for the cool greenhouse. The plant has usually one linear basal leaf 9 inches long, and a wiry scape 1 foot high bearing 3 or 4 reduced leaves and 1 terminal flower. The six widely expanded or reflexed perianth segments are spoon-shaped, bright orange or salmon with yellow bases.

**Homoglossum Merianella.** A.M. February 25, 1936. From T. T. Barnard, Esq. A Cape species like a diminutive *Gladiolus*, with tubular, curved, orange flowers 2 inches long, 3 or 4 on each inflorescence.

**Lycaste** × ‘**Lady Colman.**’ A.M. February 11, 1936. Raised by Sir Jeremiah Colman, Bart., Gatton Park, Surrey. The result of crossing *L.* × *Locusta*, Sander’s var. with *L.* × *Imschootiana*. A neatly-formed flower with broad sepals of apple-green colour; the petals tinged with yellow and slightly lighter in colour; the labellum yellowish.

**Odontoglossum** × ‘**Pandarus**’ var. ‘**Mauve Queen.**’ A.M. February 11, 1936. From Capt. Geoffrey Brocklebank, Chinley Manor, Hawkhurst, Kent. The result of crossing *O.* × *regium* with *O.* × ‘*Rosina.*’ The arching spike bore nine well-formed purplish-mauve flowers.

**Primula malacoides** ‘**Exquisite.**’ A.M. February 5, 1936. From Mr. W. F. Baker, Melton Road Nurseries, Cromer. Plant of compact, free-flowering habit, producing a succession of flower spikes 6 to 9 inches tall bearing semi-double rose-pink flowers  $\frac{3}{4}$  inch across. A true and even stock.

**Saxifraga** ‘**Cranbourne.**’ A.M. February 25, 1936. From Messrs. M. Prichard & Sons, Christchurch. A very pretty hybrid Saxifrage of the *Kabschia* section with small, grey leaf-rosettes forming a cushion, above which the relatively large, round, rose-coloured flowers are lifted on  $\frac{1}{2}$ -inch stalks.

\***Tropaeolum** ‘**Feltham Beauty.**’ H.C. August 9, 1935. Raised by Messrs. Watkins & Simpson and sent by Messrs. Hurst, Houndsditch, London. Plant 8 inches tall, of dwarf, erect, compact habit; flowers single, 2 inches diameter, bright orange-scarlet.

\***Tropaeolum** ‘**Golden Gleam.**’ A.M. September 5, 1935. Raised and sent by Messrs. Bodger, El Monte, California, U.S.A., also sent by Messrs. Watkins & Simpson, London, Messrs. Hurst, London, Messrs. Herb, Naples, Italy, and Messrs. Morris, Birmingham. Plant 10 inches tall, of semi-runner habit; flowers semi-double,  $2\frac{1}{2}$  inches diameter, golden-yellow, scented. Introduced 1932.

\***Tropaeolum** ‘**Golden Morn.**’ H.C. August 9, 1935. Raised by Messrs. Watkins & Simpson and sent by Messrs. Hurst, London, and Messrs. Harrison, Maidstone. Plant 8 inches tall, of compact, erect habit; foliage light yellowish-green; flowers single, 2 inches diameter, orange-scarlet.

\***Tropaeolum 'Primrose Gleam.'** H.C. August 9, 1935. Raised and sent by Mr. E. J. Barker, London Road, Ipswich. Plant and flowers of a primrose shade.

\***Tropaeolum 'Rosy Morn.'** H.C. August 9, 1935. Raised by Messrs. Watkins & Simpson and sent by Messrs. Harrison of Maidstone. Plant 8 inches tall, of erect, compact habit, with single flowers 2 inches across, of a bright rosy-cerise shade.

\***Tropaeolum 'Scarlet Gleam, Fusilier Stock.'** H.C. September 5, 1935. Raised and sent by Messrs. Hurst, Houndsditch, London. Plant and flowers of 'Golden Gleam' type, but flowers of a deep rich scarlet shade.

\* Awards made after trial at Wisley.

## DAHLIAS AT WISLEY IN 1935.

THE trial of Dahlias was carried out at Wisley as in former years on the site used in 1934, where again they made good growth. Two hundred and eighty-six varieties were included, seventy-nine of which had been selected by the Joint Dahlia Committee at Vincent Square in 1934, the remainder being planted for comparison, most of them having had awards in former years.

The trial was inspected by the Joint Committee at Wisley on August 21 and on September 18, 1935, and varieties were recommended for awards.

The following notes indicate the classes to which these new varieties were assigned and the awards recommended.

## AWARDS, DESCRIPTIONS, AND NOTES.

## MIGNON SINGLE

*Maroon.*

ROMA (Cheal).—2 feet. Flowers  $3\frac{1}{2}$  inches diameter; deep crimson-maroon, broadly tipped with purplish-magenta; on 6- to 9-inch stalks, erect and well above foliage.

## DECORATIVE COLLERETTE.

*Rosy-red.*

DUPLEX (Stredwick).—4 feet. Flowers 4 to 6 inches diameter; rich rosy-red, collar white and rosy-red; on erect 9- to 15-inch stalks, well above foliage.

## SMALL PÆONY-FLOWERED.

*Yellow.*

LEMON BEAUTY (Stuart Ogg).—4 feet. Flowers  $3\frac{1}{2}$  to 4 inches diameter; pale lemon-yellow; free and erect, on 9- to 15-inch stalks, well above foliage.

Lovegold (raised and sent by Mr. J. T. West of Brentwood). A.M. September 18, 1935.—3 feet. Flowers 3 to 4 inches diameter; bright lemon-yellow; very free and erect, on 6- to 10-inch stalks, well above foliage.

*Apricot shades.*

JENNIE (West).— $3\frac{1}{2}$  feet. Flowers  $3\frac{1}{2}$  to 4 inches diameter; apricot-buff; free and erect, on 6- to 9-inch stalks, well above foliage.

LALA (Burrell).— $4\frac{1}{2}$  feet. Flowers  $3\frac{1}{2}$  to  $4\frac{1}{2}$  inches diameter; bright orange-apricot; free and erect, on 6- to 11-inch stalks, well above foliage.

*Pink on yellow shades.*

MABEL MORGAN (Stuart Ogg).—4 feet. Flowers  $3\frac{1}{2}$  to 4 inches diameter; bright salmon-pink on yellow shaded orange at disc; free and erect, on 9- to 15-inch stalks, well above foliage.

SARAH PEACH (Stuart Ogg).— $4\frac{1}{2}$  feet. Flowers  $3\frac{1}{2}$  to  $4\frac{1}{2}$  inches diameter; rich rosy-cerise, shaded scarlet at disc; free and erect, on 6- to 12-inch stalks, well above foliage.

FROLIC (Burrell).—3 feet. Flowers  $3\frac{1}{2}$  inches diameter; rich rose, zoned yellow at disc; very free and erect, on 6- to 11-inch stalks, well above foliage.

**Pinkie** (raised and sent by Mr. Stuart Ogg of Swanley). **H.C.** September 18, 1935.—3 feet. Flowers 3 inches diameter; deep rose, base of petals yellow; free and erect, on 6- to 10-inch stalks, well above foliage.

**Lady Madge** (raised and sent by Messrs. Cheal of Crawley). **A.M.** September 18, 1935.—4½ feet. Flowers 3½ to 4 inches diameter; bright rosy-red, base of petals yellowish; very free and erect, on 9- to 12-inch stalks, well above foliage.

MEDIUM FORMAL DECORATIVE.

*Yellow.*

**Sceptre** (raised and sent by Messrs. Cheal of Crawley). **A.M.** September 18, 1935.—Described JOURNAL R.H.S., 60, p. 227.

*Scarlet.*

**DERBY GEM** (Treseder).—3½ feet. Foliage purplish. Flowers 4 to 4½ inches diameter; deep rich scarlet; free and erect, on 6- to 11-inch stalks, well above foliage.

SMALL FORMAL DECORATIVE.

*White.*

**Beechfield White** (raised and sent by Mr. Geo. Elsom of Spalding). **H.C.** September 18, 1935.—Described JOURNAL R.H.S., 60, p. 227.

*Yellow.*

**BARWELL** (Burrell).—3½ feet. Flowers 3 to 3½ inches diameter; pale lemon-yellow; free and erect, on 6- to 10-inch stalks, well above foliage.

*Rosy-orange.*

**Luna** (raised and sent by Mr. J. T. West). **A.M.** September 18, 1935.—3 feet. Flowers 3½ to 4 inches diameter; bright rosy-orange; very free and erect, on 6- to 10-inch stalks, well above foliage. Foliage purplish.

*Pink on yellow.*

**TOWNELEY FAVOURITE** (Barwise).—3 feet. Flowers 3½ to 4 inches diameter; bright rose on lemon-yellow, base of petals lemon-yellow; free and erect, on 6- to 12-inch stalks, well above foliage.

**BELINDA** (Burrell).—3½ feet. Flowers 3½ inches diameter; dull rose on yellow, central florets of a darker shade; free and erect, on 6- to 10-inch stalks, well above foliage.

**Cardiff Beauty** (raised and sent by Messrs. W. Treseder of Cardiff). **A.M.** September 18, 1935.—3½ feet. Flowers 3½ inches diameter; bright rosy-cerise on orange, inner florets of a deeper shade; free and erect, on 6- to 12-inch stalks, well above foliage.

*Rose and white.*

**TITBIT** (Stredwick).—4 feet. Flowers 2½ to 3 inches diameter; deep rich rose, tips white, fading; very free and erect, on 6- to 12-inch stalks, well above foliage.

*Rosy-red.*

**Ribble** (raised and sent by Mr. J. F. Barwise of Towneley, Burnley). **A.M.** September 18, 1935.—5 feet. Flowers 3½ to 4½ inches diameter; bright rosy-red; very free and erect, on 6- to 12-inch stalks, well above foliage.



**HODDER** (Barwise).—4 feet. Flowers  $3\frac{1}{2}$  to 4 inches diameter; deep rich crimson-scarlet; free and erect, on 6- to 12-inch stalks, well above foliage.

#### DWARF SMALL FORMAL DECORATIVE.

##### *Orange-red.*

**JAFFA** (Torrance & Hopkins).— $2\frac{1}{2}$  feet. Flowers  $3\frac{1}{2}$  to 4 inches diameter; bright orange-red on yellow; free and erect, on 6- to 10-inch stalks, well above foliage.

##### *Scarlet.*

**Flame** (raised and sent by Messrs. Torrance & Hopkins of Busby, Glasgow). **A.M.** September 18, 1935.— $2\frac{1}{2}$  feet. Flowers  $3\frac{1}{2}$  to 4 inches diameter; bright scarlet; very free and erect, on 6- to 9-inch stalks, well above foliage.

#### LARGE INFORMAL DECORATIVE.

##### *White.*

**White Abundance** (raised and sent by Messrs. J. G. Ballego of Leiden, Holland). **A.M.** September 18, 1935.—6 feet. Flowers 8 to 10 inches diameter; white; very free and erect, on 9- to 18-inch stalks, well above foliage.

##### *Yellow.*

**REV. GEO. GARNER** (Stredwick).—5 feet. Flowers 9 to 11 inches diameter; deep lemon-yellow; free and erect, on 7- to 12-inch stalks, well above foliage.

**Enid Crane** (raised and sent by Messrs. Stredwick of St. Leonards-on-Sea). **A.M.** September 18, 1935.—6 feet. Flowers 6 to 9 inches diameter; deep lemon-yellow; free and erect, on 9- to 15-inch stalks, well above foliage.

**A. T. SIMMONDS** (Stredwick).—3 feet. Flowers 9 to 11 inches diameter; rich golden-yellow, tinged bronze; free and erect, on 9- to 12-inch stalks, well above foliage.

##### *Coppery-red.*

**WILFRED TAYLOR** (Stredwick).—5 feet. Flowers 8 to 10 inches diameter; rich coppery-red; free and erect, neck weak, on 9- to 15-inch stalks, above foliage.

##### *Crimson.*

**SUDAN** (Stredwick).—6 feet. Flowers 7 to 9 inches diameter, many with open centres; deep crimson, tips purplish-magenta; free and erect, on 6- to 10-inch stalks, well above foliage.

**ANNA FLEMMING** (Stredwick).—5 feet. Flowers 6 inches diameter; deep velvety-crimson; free and erect, on 6- to 12-inch stalks, well above foliage.

#### MEDIUM INFORMAL DECORATIVE.

##### *Pink and White.*

**COLIN SANDEMAN** (West).—6 feet. Flowers 4 to  $5\frac{1}{2}$  inches diameter; creamy-white, tips rose-pink; free and erect, on 9- to 20-inch stalks, well above foliage.

##### *Rose-pink.*

**NORA KNIGHTON** (Stredwick).— $4\frac{1}{2}$  feet. Flowers 5 to 6 inches diameter; pale rose-pink; free and erect, on 6- to 12-inch stalks, well above foliage.

#### SMALL INFORMAL DECORATIVE.

##### *White and Pink.*

**FAITH** (Stredwick).— $4\frac{1}{2}$  feet. Flowers  $3\frac{1}{2}$  to 4 inches diameter; white, inner florets flesh-pink; free and erect, on 6- to 9-inch stalks, well above foliage.

*Yellow.*

**PRIDE OF OLDFIELD** (Rutter).— $3\frac{1}{2}$  feet. Flowers 3 to  $3\frac{1}{2}$  inches diameter ; bright lemon-yellow ; free and erect, on 6- to 9-inch stalks, well above foliage.

*Yellow and Carmine.*

**PORCUPINE** (West).— $4\frac{1}{2}$  feet. Flowers  $3\frac{1}{2}$  to  $4\frac{1}{2}$  inches diameter ; sulphur-yellow, tips tinged reddish-carmine ; free and erect, on 9- to 15-inch stalks, well above foliage.

*Pink on Yellow.*

**JOY** (West).—3 feet. Flowers 3 inches diameter ; bright orange-pink ; free and erect, on 6- to 9-inch stalks, well above foliage.

**APOLLO** (West).—3 feet. Flowers 3 to  $3\frac{1}{2}$  inches diameter ; bright rose, base of florets lemon ; free and erect, on 6- to 9-inch stalks, well above foliage.

**Marina** (raised and sent by Mr. J. T. West). **H.C.** September 18, 1935.—3 feet. Flowers 3 inches diameter ; rich rose, base of florets yellow ; free and erect, on 6- to 9-inch stalks, well above foliage.

**Poppy** (raised and sent by Messrs. Stredwick). **A.M.** September 18, 1935.—3 feet. Flowers  $3\frac{1}{2}$  to  $4\frac{1}{2}$  inches diameter ; bright rosy-coral, base of petals yellow ; very free and erect, on 6- to 11-inch stalks, well above foliage. (Gold Medal N.D.S. 1935.)

*Rosy-red and White.*

**MOROCCO** (raised and sent by Messrs. Stredwick). **H.C.** September 18, 1935.— $4\frac{1}{2}$  feet. Flowers  $3\frac{1}{2}$  to  $4\frac{1}{4}$  inches diameter ; dull rosy-red broadly tipped with white ; free and erect, on 6- to 10-inch stalks, well above foliage.

## DWARF SMALL INFORMAL DECORATIVE.

*Rosy-orange.*

**TODLER** (West).— $2\frac{1}{2}$  feet. Flowers 3 inches diameter ; bright rosy-orange, inner florets shaded orange ; free and erect, on 6- to 10-inch stalks, well above foliage.

**POMPON.***White.*

**Ermine** (raised and sent by Messrs. Stredwick). **A.M.** September 18, 1935.—4 feet. Flowers 2 inches diameter ; white ; free and erect, on 6- to 9-inch stalks, well above foliage.

*Buff and Carmine.*

**Billy Clark** (raised and sent by Mr. J. T. West). **A.M.** September 18, 1935.—5 feet. Flowers 2 inches diameter ; creamy-buff edged and flushed rosy-carmine ; free and erect, on 6- to 9-inch stalks, well above foliage.

*Rosy-red.*

**Babs** (raised and sent by Messrs. Brown & Such of Maidenhead). **A.M.** September 18, 1935.— $3\frac{1}{2}$  feet. Flowers  $1\frac{1}{2}$  to  $1\frac{3}{4}$  inch diameter ; rosy-red ; free and erect, on 6- to 9-inch stalks, well above foliage.

*Crimson.*

**Oberon** (raised and sent by Messrs. Cheal of Crawley). **H.C.** September 18, 1935.—4 feet. Flowers 2 inches diameter ; deep crimson ; free and erect, on 6- to 9-inch stalks, well above foliage.

## STAR.

*Crimson.*

BROMLEY STAR (Cheal).—4½ feet. Flowers 3½ to 4 inches diameter; deep velvety crimson; free and erect, on 6- to 12-inch stalks, well above foliage.

## SEMI-CACTUS.

*White.*

BALLEGO'S SURPRISE (Ballego).—4 feet. Flowers 6 to 8 inches diameter; white, inner florets with a creamy tinge; free and erect, on 6- to 12-inch stalks, well above foliage.

ICICLE (Brown & Such).—6 feet. Flowers 5 to 6 inches diameter; ivory-white, inner florets of a yellowish shade; free and erect, on 6- to 10-inch stalks, well above foliage.

FLORA (Carléé).—6 feet. Flowers 6 to 8 inches diameter; bright lemon-yellow; free and erect, on 6- to 15-inch stalks, well above foliage.

*Orange and Red.*

ALOIS NEELLEN (raised by Mr. Neelen, introduced and sent by Messrs. H. Carléé of Haarlem, Holland). A.M. September 18, 1935.—6 feet. Flowers 5 to 6 inches diameter; bright orange-red on yellow; very free and erect, on 6- to 12-inch stalks, well above foliage.

YOGER (raised by M. Boegschotey, introduced and sent by Messrs. H. Carléé). H.C. September 18, 1935.—5 feet. Flowers 5 to 6 inches diameter; bright light rosy-red on orange, inner florets darker; free and erect, on 6- to 12-inch stalks, well above foliage.

*Pink.*

MAARSE'S FAVOURITE (raised and sent by Messrs. K. Maarse of Aalsmeer, Holland). H.C. September 18, 1935.—4 feet. Flowers 5 to 6 inches diameter; soft light rose-pink; very free and erect, on 6- to 10-inch stalks, well above foliage.

*Pink on Yellow.*

KENNETH PRESTON (Burrell).—6 feet. Flowers 5 to 6 inches diameter; soft creamy salmon-pink on yellow, inner florets of a yellow shade; free and erect, on 9- to 15-inch stalks, well above foliage.

DOROTHY SWANSON (West).—4½ feet. Flowers 5 to 6 inches diameter; soft creamy salmon-pink on yellow; free and erect, on 6- to 10-inch stalks, well above foliage.

*Scarlet.*

R. W. HASTINGS (raised and sent by Mr. Geo. Elsom). H.C. September 18, 1935.—4½ feet. Flowers 5 to 6 inches diameter; bright scarlet; free and erect, on 6- to 11-inch stalks, well above foliage.

WEPEZO (Topsvoort).—5 feet. Flowers 5½ to 6½ inches diameter; deep rich crimson-scarlet; very free and erect, on 9- to 15-inch stalks, well above foliage.

*Mauve.*

ANDRÉ CSIZIK (raised and sent by Messrs. W. Topsvoort of Aalsmeer, Holland). H.C. September 18, 1935.—6 feet. Flowers 5 to 6 inches diameter; bright pinkish-mauve; free and erect, on 6- to 18-inch stalks, well above foliage.

## SMALL SEMI-CACTUS.

*Pink shades.*

**Baby Dot** (raised and sent by Mr. J. T. West). **H.C.** September 18, 1935.—3 feet. Flowers 3 to  $3\frac{1}{2}$  inches diameter; pale rose-pink, inner florets creamy; free and erect, on 6- to 9-inch stalks, well above foliage.

**TWILIGHT** (West).— $3\frac{1}{2}$  feet. Flowers 3 to  $3\frac{1}{2}$  inches diameter; rich rose-pink; free and erect, on 6- to 9-inch stalks, well above foliage.

**Little Love** (raised and sent by Mr. J. T. West). **H.C.** September 18, 1935.—Described **JOURNAL R.H.S.**, 60, p. 231.

*Pink and Orange.*

**Honeybird** (raised and sent by Messrs. Stredwick). **A.M.** September 18, 1935.—4 feet. Flowers 4 inches diameter; bright apricot-orange, inner florets darker; free and erect, on 6- to 10-inch stalks, well above foliage.

**ENDEAVOUR** (West).— $3\frac{1}{2}$  feet. Flowers  $3\frac{1}{2}$  to  $4\frac{1}{2}$  inches diameter; bright pinkish-orange; free and erect, on 6- to 10-inch stalks, well above foliage.

**Pixie** (raised and sent by Mr. J. T. West). **A.M.** September 18, 1935.— $3\frac{1}{2}$  feet. Flowers 3 to  $3\frac{1}{2}$  inches diameter; bright rosy-orange, inner florets orange; very free and erect, on 6- to 9-inch stalks, well above foliage.

*Pink on Yellow.*

**ACME** (West).—3 feet. Flowers  $3\frac{1}{2}$  to 4 inches diameter; rose-pink on yellow; free and erect, on 6- to 9-inch stalks, well above foliage.

**MUSIC** (Stredwick).— $4\frac{1}{2}$  feet. Flowers  $4\frac{1}{2}$  to 5 inches diameter; bright rose-pink, base of florets rosy-crimson on yellow; free and erect, on 6- to 12-inch stalks, well above foliage.

## CACTUS.

*Yellow.*

**KITTIWAKE** (Stredwick).—5 feet. Flowers 5 to 6 inches diameter; pale sulphur-yellow; free and erect, on 6- to 10-inch stalks, well above foliage.

**Inspiration** (raised and sent by Messrs. J. G. Ballego). **H.C.** September 18, 1935.—6 feet. Flowers 6 to 7 inches diameter; bright lemon-yellow; free and erect, on 9- to 15-inch stalks, well above foliage.

*Old Gold.*

**CORNCRAKE** (Stredwick).—6 feet. Flowers 6 to 7 inches diameter; bright old gold; free and erect, on 6- to 7-inch stalks, well above foliage.

*Mauve.*

**PETUNIA** (Stredwick).—6 feet. Flowers 6 to 7 inches diameter; bright rosy-mauve; very free and erect, on 9- to 15-inch stalks, well above foliage.

## BOOK REVIEWS.

"The Living Garden or the How and Why of Garden Life." By Dr. E. J. Salisbury, F.R.S. 8vo. xi + 338 pp. (Bell, London, 1935.) 10s. 6d.

The author in his preface quotes Shelley to the effect that poetry should "Lift the veil from the hidden beauty of the world." Here we have that rare combination, one who understands the inner working of the forces that make the life of the plant and the interplay of forces that allow a plant to grow in Nature where we see it, who at the same time sees something of the beauty of the mechanism, and feels there is something to marvel at in it, and who has the power of expressing himself in simple and entertaining fashion without departing from the truth. He has indeed lifted the veil and shown something of the hidden beauty of the world.

This is no book to assist in mere preparation for examination honours, but it is a book every student should read. It is no book for the man whose sole desire is to be told the best compost for a double daisy or the proper dose of chemicals for the cultivation of mustard and cress, yet it would be good—very good—for him if he will start to read it. He will not put it down until it has widened his conception of the garden and what it contains and given him an insight into plant life such as he had never conceived. The owner of a town back-yard will not find directions for the making of a perfect lawn, nor the owner of a park how to treat a stag-headed oak, but both will be the better able to devise means to their ends if they read and understand what is written in this book, and it is easy to read and to understand.

It is indeed a book that every lover of good books will appreciate, one that every lover of a garden will delight in, and one that will help a reader to be both who at present would claim to be neither.

"Allotments." Ministry of Agriculture, Bull. 90. 8vo. 54 pp. (H.M. Stationery Office, London, 1935.) Paper cover, 1s. net.

An introduction giving a brief history of the allotment system of land tenure in England with a definition of the terms "allotment" and "allotment garden," and with notes on Allotment Associations and model rules, has been provided by the Land Division of the Ministry of Agriculture.

The remainder and much the larger portion of the Bulletin consists of advice on the working of an allotment garden and is written by Mr. John Stoney. The book is eminently practical and forms an excellent introduction to vegetable growing in the small garden. The cultivation of a few flowers is recommended and brief directions with a list of kinds suitable occupy a page or two. A commendable feature of the book is the section on huts or sheds. Groups of allotments are too often made an eyesore by the hideous structures that are found upon them, and we might take a lesson from practice in certain continental areas in this respect, where the shelter becomes almost a week-end residence made gay with flowers and climbing plants. Without going as far as that a great deal might be done to avoid the uglification of the outskirts of industrial areas, and this Bulletin points the way.

"Welsh Timber Trees: Native and Introduced." By H. A. Hyde, M.A., F.L.S. Ed. 2. 8vo. viii + 107 pp. (Nat. Mus. Wales, Cardiff, 1935.) Paper cover, 2s.

This excellent handbook, well written, well printed, and well illustrated by photographs and line drawings, gives a short botanical account of each of the timber trees grown in Wales, notes on the cultural characteristics of each, lists with measurements of notable trees of each species (as readers of *Conifers in Cultivation* will remember, the tallest tree of any kind in the British Isles is to be found in Wales), and an account of the uses to which the timber is put.

A list of 135 books relating to British timber trees and an excellent index add to the value of the book.

"Vernalization and Phasic Development of Plants." 8vo. 151 pp. (Imperial Bureau of Plant Genetics, Cambridge and Aberystwyth, 1935.) Paper cover, 10s.

The modern horticulturist has as his ultimate objective the complete control of plants growing either for pleasure or profit; plant physiologists have enabled

the practical grower to appreciate more truly the operation of the various factors which influence the behaviour of plants. During the last twenty years certain activities of the plant, hitherto almost entirely unexplored, have been investigated and subsequently controlled—as, for example, the production of flowers which with many species can now be regulated by manipulating the daily period of light and darkness. During these years attention has also been directed by Kidd and West and others to the fact that various treatments of the young seedling, or even of the seed itself, can produce effects lasting long into the life-cycle of the treated plant, as do, for example, the “pre-soaking” treatments.

Lysenko, a physiologist at Odessa, has more recently (1932) postulated an important theory, somewhat novel in its implications, concerning plants. Theoretically he distinguishes between growth (increase in size and weight of tissues) and development (such profound changes as flowering and reproduction). He elaborates the hypothesis outlined by Garner and Allard, Maximov, and the reviewer that these processes may proceed concurrently or independently, and that by manipulation of external factors or by early treatment of the young plant it is possible to favour either change to the exclusion of the other.

By germination at low temperatures seeds of winter varieties of cereals can be spring sown and the seedlings will behave as those of a spring variety. The Russian word “Jarovizacija” has been coined to express this conception and translated freely, we have the term “vernalization,” the transformation of winter forms into spring ones. Without this predetermination, the two forms react in an entirely different way to the seasonal changes of climate; as is well known, a winter variety of wheat, if spring sown, remains as a vegetative rosette of green leaves all the summer and no ears develop.

Many English readers owe it to the Imperial Bureau of Plant Genetics that Lysenko's work and theories were first brought to their notice. These Bureaux have now reviewed the vast bulk of literature which reflects the continued and concentrated activity of the Soviet Union workers upon them and related problems. Many crops hitherto impossible to grow in the Arctic region, with its short summer, have, it is claimed, been successfully cultivated there, as the result of predetermining early treatment. It is here that the main economic importance of the work of Lysenko's school lies. The further possibilities claimed are extremely interesting: it remains to be seen whether practice will uphold the theory.

For English cultivators it would seem that by somewhat similar treatments it may be possible so to accelerate the growth of market garden plants that they may be produced earlier or even “out of season.”

The present publication affords the means by which all those interested in the Russian research work can see their results almost at a glance. A useful section dealing with the results obtained in other countries, including our own, Germany, Holland and the United States, enables us to judge more accurately the potentialities under our own climatic conditions, and to see that the Russian work has already, in certain aspects, received some confirmation.

In the last useful portion the literature, of many titles and in many languages, is listed. Sir David Chadwick has written a short foreword in which he outlines very briefly the work of the Bureaux. That their work is highly appreciated is readily seen—the first bulletin dealing with Lysenko's work was quickly sold out. The stimulus to examine critically Lysenko's claims, striking and extravagant as they may seem, largely arose from the publications of these Imperial Agricultural Bureaux.

M. A. H. TINCER.

“Insect Pests of Glasshouse Plants.” By H. W. and M. Miles. 8vo. 174 pp. (H. C. Long, “The Birkins,” Hook, Surbiton, 1935.) 8s. 6d. net.

“Of making many books there is no end . . .” but of making authoritative textbooks on pests of horticultural plants there is only the beginning. The agriculturist suffers less than the horticulturist from the dearth of reliable treatises dealing with plant pests. The glasshouse industry in this country is a flourishing and expanding concern, and the interest taken in decorative plants and vegetable crops under glass is in no way confined to the market grower, for a large company of private gardeners take an active interest in glasshouse plants and suffer from the absence of readily available information relating to the pests which beset them.

The authors, in the Preface, express the hope that they have given growers an account of pests such as occur in glasshouses, and of the measures that are applicable for controlling such pests under the special conditions of glasshouse horticulture. A survey of their book shows that their hopes are realized, for one may glean information on all aspects of the subject—the signs of attack, the biology and habits of each species, the preventive and curative measures to be

adopted, and the conditions which affect the nature of the pests in glasshouses—matters which are considered in an attractive and clear manner.

There are nine chapters, of which seven (Chapters II–VIII) are devoted to a review of the chief pests, namely Insects, Eelworms, Slugs, Woodlice, Millepedes and Spider Mites.

Chapter I deals with the highly important matter of conditions in glasshouses in relation to the occurrence and control of pests. The principles of clean cultivation are here set forth in a brief but lucid style.

The final chapter (IX) is a discourse on the methods of pest control in glasshouses, arranged under a series of sectional headings, namely Soil sterilization by heat; Chemical treatment of soil; Fumigation of glasshouses; Humidity in glasshouses in relation to fumigation; and Insecticides for use in glasshouses.

The recognition of the several organisms which attack plants, from a study of the type of injury set up by each, has been appreciated by the authors, who have provided in Appendix I an alphabetical list of the chief glasshouse crops together with the pests associated with each. The grower is able, therefore, with the aid of this list, to determine with ease the parasite from the injury it does, and he may then consult the text for information concerning its life cycle and habits, and the methods to be employed for combating it.

Appendix II is a selected bibliography arranged under various headings, e.g. Aphides, Capsids, etc., Virus Diseases, Weed Suppression, Insecticides and so on.

The Index is so complete that the authors may be considered by some to have been prodigal in devoting thirteen pages to it, but the advantages of introducing such a complete guide to the subject-matter in the text are considerable.

The photographic illustrations are excellent, and all of them, with two exceptions, were specially made by the authors for use in this book. Some of the text-figures, on the other hand, are poor.

The proof-reading has been carried out with care, for the number of errors is small. We note, however, *Chorozeia* for *Chorizema* (p. 51); *Irisine* for *Iresine* (p. 81); *Lecanium persicae* for *L. corni* (pp. 91, 156); and the figures (72 and 74) on Plate XVIII, which should be transposed.

The list of injurious species is stated by the authors to be inevitably incomplete, but the number of omissions of pests is so small that the value of the work is in no way impaired.

The introduction of a certain number of cross-references is desirable: for instance, the toxic effect of Tetrachlorethane vapour to certain plants mentioned on p. 144 should be referred to on p. 85 to prevent disaster to those who are inclined to scan rather than to study the text.

A certain number of omissions is apparent, e.g. the treatment of loam heaps against wireworms with Carbon bisulphide (p. 28); the occurrence of Vine weevil larvae in pots of tuberous-rooted Begonias (p. 29); the frequent occurrence of Aphodius larvae in glasshouse soils into which they have been introduced with the manure (pp. 30–31); the effect on the foliage of certain plants due to watering the roots with 1 per cent. Nicotine (p. 37); the use of Nicotine dusts for controlling Tortrix leaf-tiers (p. 55); the destruction of weed hosts in relation to the Chrysanthemum leaf-miner (p. 57); the susceptibility of Gladiolus corms to *Anuraphis tulipae* (p. 69); the relationship between *Aphis gossypii* and Lily Mosaic (p. 71); the fact that the late Prof. Maxwell Lefroy was the first to discover the Encarsia parasite of the greenhouse white fly and to introduce it to various centres during the years 1914–1915 (p. 83); the danger of applying White oil emulsions to the foliage of certain Palms (p. 96); the damage caused by young Slugs to the foliage of Palms (p. 156); and the omission of the species of Tarsonemid mites which attack Begonias, Cyclamen, Fuchsias and other glasshouse subjects.

The authors are to be congratulated on the production of a textbook which will rank for some years as an authoritative treatise on glasshouse pests. This volume will be valued by all who are interested in the cultivation of plants under glass.

G. FOX WILSON.

"Garden Variety." By the late Sir Arthur Hort, Bt. Edited by Lady Hort. 8vo. 255 pp. (Edward Arnold, London, 1935.) 10s. 6d.

This book is a very precious heritage from one of the most accomplished and many-sided of the distinguished amateur gardeners who have done so much to encourage the cultivation of good forms of plants during the last three decades.

More fully than any of them he possessed qualifications for writing with both authority and charm. His classical scholarship and retentive memory provided

him with stores of knowledge gleaned from the works of such authors as the Greek Theophrastus, the Roman Pliny and our own English Gerard.

His delightful personality made him a welcome visitor to the best gardens of the day, where he acquired more recent knowledge of the ways of skilled gardeners and growing plants. This, mingled with his literary lore, provides a perfect blending of legend and fact to delight as well as inform. His keen sense of humour sparkles lightly and frequently but always spontaneously and appositely.

He not only observed the tricks and ways of unusual plants but worked assiduously with his own hands collecting alpine plants, propagating, planting and pruning to form two nice collections of plants, first at Harrow and then at Hurstbourne Tarrant. Thus he was enabled to impart knowledge gained by actual experience and in so doing was always as ready to acknowledge mistakes and failures as to reveal the methods he employed with success.

He is over-modest in chronicling the skill by which he enriched so many gardeners with plants of his own raising, as, for instance, of the fifty-five Iris names to be found in the index, only one, 'Ann Page,' represents the many glorious seedlings that he raised; and that is mentioned chiefly to point out that it failed to grow as well on the chalk of the Hampshire garden as on the London clay of its birthplace at Harrow.

Space allows mention of but few of the gems to be set in the chains of our garden talk as quotations from this delightful book.

The early-rising habit of *Paeonia Cambessedesii* is recorded for 1935 "as above ground and asking for trouble, halfway through January." *Cynoglossum nervosum* and *Paracaryum caelestinum* are said to be apparently the same thing in other words. What better definition can be found for synonym?

"A plant of too lavishly spreading habit if regarded as a licensed weed and pulled up where it is not wanted, may have its points." The Iris-grower should grow his plants "as dry as he dare."

Lady Hort deserves to be warmly congratulated on the excellent editing, and also the garden-loving public, in that she has accomplished the early publication of this companion volume to the "Unconventional Garden."

"The Cool Greenhouse." By L. N. Sutton. 8vo. xii + 186 pp. (Putnam, London, 1935.) 5s.

Some of the books offered for the consumption of horticulturists appear to be written by those who have no critical horticultural knowledge and merely interlard their text with undigested matter garnered at haphazard from the equally ignorant; some are compilations put together with greater discernment and tell what others have found successful—these are often very useful though they may provide nothing new; a few are written out of long experience and impart that experience in a lucid and orderly fashion—these are worth much.

This book belongs to the last class.

No one with a cool greenhouse which he desires to keep gay over most of the year, and a few frames, can afford to be without this book. It is the outcome of many years' experience on the part of the author's father and of the author's gardener, and it deals for the most part with plants that can be raised from seed and grown successfully at small cost, provided the simple directions clearly given are followed.

Much use is made of annuals, but biennials, bulbs and such plants as Begonias are not neglected. One must look elsewhere, however, for Carnations, Gladioli, greenhouse shrubs, Fuchsias, Pelargoniums and climbers.

One adverse criticism we have to make—that the recognized rules for writing botanical names are not always followed, and in some instances plants are not given their proper names, e.g. *Kalanchoe globulifera coccinea* (*sic*) should be called *Kalanchoe Blossfeldiana*.





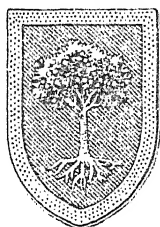


FIG. 43.—DELPHINIUM KNORRINGIANUM.  
From Central Asia.  
(p. 196)

[To face p. 189.

# JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

Vol. LXI



Part 5

May 1936

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## JUDGING AT FLOWER SHOWS IN THE UNITED STATES.

By LADY MOORE.

THE late Sir WILLIAM LAWRENCE had arranged to visit the United States to judge at the Spring Flower Shows in 1934. His much regretted death in January caused the President and Council to make another choice and Sir FREDERICK MOORE and I were fortunate in being invited to act as judges and delegates from the Council to award the trophy presented by it to the 21st Annual Flower Show of the New York Horticultural Society. We were very much surprised and gratified by the honour conferred on us by the Council, and received many letters of welcome from Mr. RICHARDSON WRIGHT, Secretary of the New York Horticultural Society, who made every arrangement for our journey and tour.

We left Ireland on March 1. Before joining the S.S. *Washington* at Queenstown we had time to pay a visit to Foaty Island where we saw *Magnolia Campbellii* in full bloom in the open, *Clematis napaulensis*, and *Jasminum primulinum* flowering freely on a wall. Eight days later we saw the beautiful Hudson River with its fringe of skyscrapers against a leaden sky, snow falling heavily. That night there were eighteen degrees of frost. No one I met in the United States believed me when I mentioned *Magnolia Campbellii* and her flowering companions in the open air on March 1 in the county of Cork.

We went to Boston for the 63rd New England Spring Flower Show of the Massachusetts Horticultural Society which was held from March 12 to 17. On March 11 snow fell heavily and during the night there were twenty degrees of frost—not encouraging for exhibitors of Orchids and tender plants. Notwithstanding this, large groups of

Orchids most beautifully and artistically arranged were staged. The hall was very much heated and to save the plants from dry air, skilfully placed and hidden sprayers of warm water were used to moisten the air.

Each judge was given a Rule Book for Exhibitors and Judges. The first paragraph in the introduction was, "Exhibitions are expected to be educational. This Society requires the greatest accuracy in classifying the plants, flowers, and other horticultural products shown. It automatically rules out plants, flowers, fruits, vegetables which are not of the highest grade. It requires the exhibition of plant materials of all kinds which mark progress in horticulture. It is important that the exhibitor as well as the judge should have these facts in mind, and that they should transcend any mere personal opinions."

Excellent advice is given about staging, errors of overcrowding, backgrounds, suitable containers and insistence on exhibits being correctly named and uniformly labelled. The General Rules are clearly laid down—one being, "A simple outline or plan of all garden exhibits for a show to which an admission is charged must be submitted to the Committee on Exhibitions for approval at least three months before the Show. This is not merely an arbitrary rule, but is made in the interests of proper co-operation between exhibitors and for the development of better exhibitions."

Another rule—"All Orchid plants in an exhibit must have been the property of the Exhibitor for at least six months."

Notes for exhibiting and judging vegetables emphasize the importance of uniformity and size most desirable for cooking—"Oversize means coarseness," "Oversize is to be avoided," "Choose small size." Here the influence of women on the Schedule Committee is found. Three pages are given to Meanings of Terms commonly used, such as Accessories, Amateur, Biennial, Blooms, Cluster, Novelty, Meritorious, Professional Gardener, Stalk, Varieties, Woody—nothing is forgotten or left to chance. At the end of the Rules there is: "Note.—Flower Shows are meant to be educational."

Score cards were used and an established scale of points was given for all classes. The prizes for the larger classes were on a very generous scale—so was the space to be filled—for instance, for a group of Acacias covering 1,500 square feet the prize was just £300. For a group of Orchids shown by an amateur the first prize was value £40; for a similar group by a trade exhibitor the prize was £80. A garden of annuals covering 1,000 square feet received a £200 prize. For commercial growers only, for an exhibit covering 800 square feet—lawn, rose beds, trees, shrubs—a prize of £480 was given. This prize was won by the Towpath Gardens, Hertford, Connecticut, for a New England house 150 years old, which had been brought intact and set up on the stage. Its fully-stocked garden, woodshed, well-head, garden tools, fence, roadway, were complete. A white Lilac 25 feet high covered with flowers grew at the side of the house. A Maple in tender leaf made a telling

background for the Lilac. The planting of the garden was done with native plants.

The Garden Clubs Competitions were for courtyards, a small garden living room, and small modern gardens. The variety, originality, beauty, and attention to detail in these gardens were remarkable—Moorish, Spanish, Italian, Swedish courtyards with brilliant flowers, wells, pottery, pumps, and furniture all in keeping were exhibited. It was a most difficult class to judge. The actual work of making the accessories, laying out, planting, making paths, laying gravel, and painting furniture was done by the members of the clubs. The members are all women. The most novel, interesting and charming of all the exhibits to us was that of native plants as they would appear growing in a wood or marsh. It was a perfectly arranged bit of New England woodland—trees, ferns, Bog Myrtle, Trilliums, Shortia, *Cornus canadensis*, *Sanguinaria canadensis*, *Sarracenia flava*, *S. purpurea*, a marshy place—and appropriately beside it a bird sanctuary set up by the Massachusetts Audubon Society. The birds of the State of Massachusetts were shown in a little wood with a little piece of swampy ground. Each bird had a very small numbered label, and a cleverly done key to the numbers was placed on each side of the exhibit. Every plant in these two exhibits had been forced. The interest taken in the Flower Show by the people of Massachusetts can be judged by the attendance. During a week of bitterly cold weather with snow, over 87,000 people visited the Show.

The Pennsylvanian Horticultural Society, organized in 1827, held its show from March 12 to 17 in the Commercial Museum, Philadelphia. We travelled by night from Boston, and were met by the Secretary, Mr. JOHN WISTER, at the station at 7 A.M., who apologized for the absence of the Mayor of Philadelphia owing to illness. At 7 A.M.!

Preparations had been going on in the Museum for three weeks. An avenue of 30-foot Pin Oaks (*Quercus palustris*) formed a vista down the middle of the building from the entrance door to the western wall, where was the façade of a large mansion surrounded by laid-out gardens. Tall hedges of Arbor-Vitae divided one aisle from another and formed a background for each display. The paths of each aisle led to some outstanding exhibit—Orchids and exotics, Rose gardens, Carnations, annuals. The focal point of the centre aisles was a fountain in a pond which was filled with Nymphaeas and other aquatic plants. The finest exhibit was a garden of Acacias shown by Mr. JOSEPH WIDENER, grown by his gardener, Mr. KLEINHEINZ. It consisted of large trees, over twenty species and varieties, arranged in a grove with a pathway winding through it, very cleverly grouped, perfectly grown and timed to the hour of the opening day. It was a triumph of cultivation. The rock gardens were on a very large scale, with bold effects of stone and water, planted with very well-grown house-cultivated alpines, sub-shrubs and native ferns. The groups of Trilliums were very good. Roses, Azaleas, Orchids, and annuals were well shown. Much attention was given to the florists' department: bouquets, buttonholes, sprays,

even wreaths—representing all that is so charmingly “said with flowers” in the United States—were shown as offerings for all stages of life from the cradle to the grave.

The 21st Annual Flower Show in New York was held from March 19 to 24 in the Grand Central Palace. There are four floors in this building: all were filled with exhibits. Judging began on a Monday morning at ten o'clock, when all signs of preparation for staging of exhibits had disappeared. In the larger garden exhibits many spectacular effects were made by groups of *Cornus florida* and *C. florida rubra* from 5 to 25 feet in height, which had been railed from Florida in full bloom. Well-flowered bushes of white Lilacs, Azaleas, climbing Roses, Clematis, groups of Lilies, were all planted out with taste and skill. The first rule in the schedule is that all trees and shrubs used must be growing stock having sufficient roots to ensure life throughout the period of the show, and must be balled in burlap and not in tubs or pails. The show was open for six days. Great interest is taken in exhibits of annuals, and the prizes offered were generous. Groups of *Antirrhinums* with stems from 3 feet to 4 feet 6 inches were more like Hollyhocks than *Antirrhinums* as known in Great Britain. Stocks, Scabious, Gerberas, were all on a scale unknown to us. For a garden of 500 square feet, where great latitude was allowed with plants shown in it, a sum of £450 and a special trophy were provided. This seems lavish, but considering that during the week preceding the show snowploughs were busy in the streets, it can easily be understood how much intensive and skilful forcing must have been necessary to produce the wonderfully flowered specimens which went to make up these groups.

Encouragement was not confined to plants and flowers. Scientific and educational sections were provided. The New York Botanic Garden showed a special exhibit of Californian wild flowers in their native setting of plains, foothills and desert. The Brooklyn Botanic Garden showed a fine display of *Crocus* species and varieties in small pans, making it possible to study and compare varieties. They also had an exposition of the methods of pruning trees, ornamental shrubs, and fruit trees, graphically depicted with living specimens. The shoots to be removed, and the exact places at which they should be removed, were clearly shown. The parts to be removed were painted a bright red. It was a most simple and efficient way of teaching pruning and the removal of diseased portions of a plant. The number of people standing round this group taking notes and gazing with interest on a formidable collection of pruning shears, sécateurs and knives with which to execute the precepts of this silent demonstration augured well for the future shape of their trees.

Mention must be made of a remarkable collection of *Clematis* in full flower shown by Mr. J. E. SPINGARN, consisting of one hundred and seventeen plants comprising sixty-two varieties trained on a light white wooden fence inside the enclosure, others growing on stakes in pots. It is well known that Mr. SPINGARN is a keenly interested

amateur, and it was a fine achievement to cultivate to such a state of perfection a group of Clematis in the month of March.

The Garden Club of America had many competitions for amateurs. They included Garden Design, Miniature Gardens, and Spring Gardens. The Conservation Roadside Committee had a demonstration of Naturalistic Roadside Planting, featuring native plants—a very elaborate and beautiful exhibit.

"The English Village" Competition was the work of the Garden Club of America—different clubs undertaking one house. Another, the Fairfield Garden Club, laid out the Village Green which was in the centre of a large hall: a pond on which ducks and ducklings disported themselves, around the Green typical old English-village houses, the planning and architecture carried out with perfection of detail by the competing clubs.

The planting of the gardens was done with accuracy, taste and knowledge of English village garden plants which spoke of much study of the subject—Polyanthus, Honeysuckle, Daphne bushes, hedges of Lavender plants, old bushes of Southernwood, *Clematis montana*, Rosemary, Cherry trees in bloom, Currant bushes, herbs, English Ivy—this last a great treasure—Pansies, St. Brigid Anemones, were only a few of the plants used. A red bicycle outside the Post Office, a sign "To London," the sign on the Inn, "The Crowing Cock Since 1761," were details giving a thoroughly English atmosphere. We were told that the Committee had decided that the trophy sent by the Council of the Royal Horticultural Society was to be given to the exhibit in the whole show "most reminiscent of England," so to this delightful and realistic piece of work the beautiful Silver Cup was awarded. When the cup was placed on a stand in the Village Post Office, and the award made known, the enthusiasm was so great, the public thronged the passages in such numbers, that movement was impossible. The plaintive exhortations of a policeman, "Ladies, ladies, don't stop to look at the flowers, keep on moving, if you please," had no effect on those who had paid the equivalent of eight shillings to do so. His voice was the voice of Authority, but his accent had been acquired in County Cork.

The Federated Garden Clubs of New York staged, amongst many other exhibits, an extensive soil demonstration showing the proper growth for certain soils. Each group was fully demonstrated by well-selected plants.

The decorative arrangements were an important feature of the show. Two halls were set apart, and the originality of the designed "set up" of niches—pedestals painted black relieved by a background of pale grey—was effective in not distracting the eye from the exhibit. Each exhibit was in a separate niche with separate lighting arrangements.

The Japanese displays were of great distinction. They were in niches 6 feet by 8 feet on simple box-like platforms painted a dark plum colour, the background above them of Japanese silver paper slightly

dulled. Different styles of decoration were used. The "Enshiu-Ryu," a school of arrangement of the early seventeenth century which one of the exhibitors had studied for seven years in Japan, the "Nageire" style of A.D. 600, and other classic schools of the "Tokugawa" period were shown. Only those who saw the beauty of Willows arranged by the Japanese ladies can realize how lovely, how artistic, and how far removed from our usual bunch of rigid wands are their truly beautiful arrangements.

To judge a large entry under the heading Class A, "Six or less lines of poetry or prose to be selected by exhibitor. Illustrated with arrangement of plant material. Accessories permitted," was anxious work.

"No white or red was ever seen  
So amorous as this lovely green"

ANDREW MARVELL

was triumphantly expressed by leaves of varying forms and surface in a clear green-white glass bowl. A large composition illustrating Alfred Noyes's "Come down to Kew in Lilac Time," with magnificent masses of white Lilac and yellow Tulips, was more simple—but when confronted with the exhibit illustrating

"Since thou art pitiless  
Thy weary way  
Thou art doomed to wander  
'Til the Judgment Day"

I wondered how the Council's Committee would feel if called on to judge it at Chelsea Show.

There were ten classes for Orchids, some for groups of different kinds, some for individual genera, some for hybrids—with tempting prizes ranging from £20 to £60 as first prize. The best groups were those of *Cypripediums* and *Cymbidium*s. In almost all groups ferns and foliage plants were allowed to be used. On the whole the standard was not very high although there were some very meritorious groups. One mixed group was perhaps the best of all the exhibits and in it many species now hardly ever seen in England were well shown, such as *Phaius*, *Laelia superbiens*, and the non-bulbous *Calanthes*. *Vandas* tastefully arranged on the floor amongst rocks and creeping plants were very striking and well done.

A feature which was general at the three Great Spring Shows was the excellent cultivation and artistic way in which annuals and biennials were shown as cut flowers. Stocks, Larkspurs, *Delphiniums* (perennial), Snapdragons—I have never seen at any show in the British Isles such well-grown forced materials as these plants. In the month of March in a climate such as that of the Eastern States, many difficulties must have been overcome to produce the well-formed, well-coloured, well-foliaged cut Roses which were exhibited. These were extremely well staged, where each Rose on its long stalk could be seen separately, all



arranged so that there was no overcrowding such as so often mars the effect of Rose exhibits at our shows. Exhibitors were expected not to have any fading or withered specimens in their exhibits during the six days' duration of the show. They had to make arrangements to renew and reconstruct their groups every second day as the halls were kept very much heated. This excellent arrangement ensured a continuous flow of visitors up to 10 P.M. on the closing day. On some days the crowds were so great that the streets adjoining the hall were cleared of all motor-cars by the police, and the queue awaiting admission became so long that the Secretary was told that the police might compel him to close the doors for some time until traffic was reorganized. The charge for admission from the first hour of opening to the closing hour was the same—8s.

The Royal Horticultural Society's trophy was presented by Sir FREDERICK MOORE at a large dinner at which 520 members of the New York Horticultural Society were present, and it was received with prolonged applause. All the speakers charged us to convey to the Council of the R.H.S. grateful thanks and appreciation for what they termed the honour conferred on them by the donation of this trophy.

We gratefully acknowledge the welcome, hospitality and kindness we received during our stay and wish to thank the President and Council of the R.H.S. for giving us the opportunity of visiting the United States to judge at the three Great Spring Shows.

A NEW SPECIES OF DELPHINIUM WITH BEAUTIFUL  
FLOWERS FROM CENTRAL ASIA.

By Prof. Dr. BORIS FEDTSCHENKO (Bot. Inst. Acad. Sci. U.S.S.R.).

AMONG the important and scientifically very interesting botanical collections made in southern Kirghizia on the slopes of the Alai Mountains by the well-known traveller and botanist, Mrs. O. E. KNORRING, a prominent place belongs to a species of the genus *Delphinium*, remarkable for its beauty as well as its isolated taxonomical and geographical position (fig. 43). Its nearest relatives are *D. caeruleum* Cambess. from the Himalaya, and *D. pycnocentrum* Franch. from Yunnan, which the monographer of the genus *Delphinium*, E. HUTH, refers to his section *Cheilantheae*. The description of the plant we give below, the character of the lower petal in particular clearly showing the essential features by which our plant differs from the named species.

Owing to the beauty and elegance of its large, blue-purple flowers, the plant should be of considerable interest to horticulturists, being especially suited for rock gardens. As it occurs under natural conditions in high mountain regions, it is likely to prove hardy in the climate of northern Europe.

We are giving here a description of the plant which we have named in honour of O. E. KNORRING.

***Delphinium Knorringianum*** B. Fedtsch. n. sp. Perennial 35-40 cm. high. Root elongated, slightly thickened. Stem ascending to nearly erect, towards the top somewhat branched. Leaves nearly all gathered at the base of the stem, with long petioles; length of petiole 8-12 cm., leaf-blade in general outline approximately pentagonal, five-lobed; lobes toward the base broadly cuneate, at the apex indistinctly five-lobed. Stem leaves considerably smaller, with shorter petioles, to nearly sessile; lobes broadly-linear, entire. Inflorescence much spreading, branched, pedicels with bristling hairs with two bracteoles in the middle; bracteoles very small, linear. Each stem bearing 3-5 large, very beautiful blue-purple flowers. The upper sepal 18 mm. in length, provided with a 22-mm.-long spur; the blade of the sepal elongated, narrowed at the tip, the spur at its tip bilobed, the lobes diverging; the whole sepal, especially the spur, pubescent outside. The rest of the sepals 22 mm. long, 12 mm. broad, elongate-elliptic, pubescent at the outside. Petals pale blue purple; the upper petal bearing a spur up to 40 mm. in length; lower petals with elongate-linear limb gradually passing over into a claw, narrow, rounded at the top; upper petals with elongate-elliptic limbs gradually passing over into a claw, at the apex slightly bilobed carpels 2-3, elongate-lanceolate, densely pubescent. Seed unknown.

Occurrence : Asia Media, Kirghizstan, Osh district, sources of the Akhbura river (Alai range), 1/14/VII. 1913. No. 368 (flowering spec.) leg. O. E. Knorring.

**Delphinium Knorringianum** B. Fedtsch. nov. spec. Planta perennis, glabrescens 30-45 cm. alta. Radix elongata, parum incrassata. Caulis adscendentes vel suberecti, versus apicem paulo ramosi. Folia fere omnia basilaria, longe petiolata; petiolus 8-12 cm. longus; lamina ambitu subpentagona, quinquelobata, lobis versus basin late cuneatis, apice subquinquelobulatis. Folia caulina multo minora, brevius pedicellata vel subsessilia, lobis late linearibus subintegris. Inflorescentia laxissima, ramosa, pedunculi patenter pilosi, medio bibracteolati, bracteolae minutae lineares. Flores in caule singulo 3-5, magni, laete violacei, speciosissimi. Sepalum superius calcariferum, circ. 18 mm. longum, calcar circ. 22 mm. longo, lamina oblonga, apice attenuata, calcar apice breviter bilobum, lobis divaricatis, sepalum superius extus praesertim calcar puberulum; sepala cetera circ. 22 mm. longa, 12 mm. lata, oblongo-elliptica, extus puberula. Petala pallide violace superiora calcariferum, usque 40 mm. longum, petala inferiora lamina linearielongata in unguem sensim attenuata, apice rotundato attenuata. Petalorum superiorum lamina oblongo-elliptica, in unguem sensim attenuata, apice breviter et anguste biloba. Carpellae 2-3, oblongo-lanceolatae, dense pilosae. Semina ignota.

Habitat : Asia Centralis, respubl. Kirghisica, in ditione Osch, ad fluvii Akbura tractum superiorem (jugum montium Alaicum) 1/14/VII. 1913. N. 368 flor. legit Olga Knorring.

## CONTRIBUTIONS FROM THE WISLEY LABORATORY.

## LXXVII.—THE INFLUENCE OF SOIL FACTORS ON THE GROWTH OF PLANTS.

By Dr. M. A. H. TINCKER, M.A., F.L.S.

## II.—SHRUBS.

It is a commonplace observation to notice the relative success or failure of cultivated plants in different gardens. Such success, or failure, may be due to many causes ; conditions of climate, including shelter and aspect, are amongst the primary factors governing the growth of plants, and soil conditions are of great importance. It is well known that the success or failure of certain plants, as many *Ericaceae*, may be determined by the soil conditions. It has been considered desirable to test the behaviour of certain selected garden plants when grown in different soils. These soils have been brought into close proximity to eliminate the influence of varying climatic conditions ; differences observed in the growth of the plants may then be considered as primarily due to the soil.

This report forms the second of a series dealing with the soil tests made at Wisley. In the former report the plants considered were vegetables, whose reactions revealed the characteristics of the soils. Other information regarding the soils was obtained by mechanical and chemical analysis and from data obtained on analysing the plants. To Dr. JACOBS we were indebted for observations concerning the nitrifying power of the soils. All details will be found in the JOURNAL R.H.S. 59, p. 251, 1934.

The soils employed were :

- (A) a sample from the London clay near Guildford ; with some sand, a high silt content, no chalk.
- (B) a heavy loam, rich in fibre, no chalk.
- (C) a chalky soil from Horsley, with no fine particles.
- (D) a Bagshot sand, with very little silt, no clay particles, and no chalk.

No shade was given to any plants in the experiments. No artificial watering took place, so that the plants were entirely dependent on the natural rainfall. In this connexion it is well to point out that the depth of all soils was 3 feet, over a natural gravel drainage, and no signs of water-logging have been observed during the entire period. For details of moisture content of the soils the earlier report should be consulted.

*LONICERA NITIDA.*

Small plants some 6 inches in height were planted in the soils on April 7, 1932. In each pit the plants were spaced one foot apart. Thirty plants were tested in each of the four soils. The plants soon became established and the number surviving was high. From the outset it was apparent that vigorous growth was taking place in the plants in the loam soil. Slight signs of chlorosis developed in the chalk, the leaves rapidly becoming pale.

*Lonicera nitida*, one year after planting.

Soil.	Percentage of plants surviving.	Average height.	Number of branches.
		cms.	
Clay . . .	96	14.1	7.1
Loam . . .	83	24.0	15.4
Chalk . . .	90	13.7	6.6
Sand . . .	90	13.2	7.0

A year after planting all the soils had maintained a high percentage of the plants. Growth in height together with growth in width is a fair measure of vegetative vigour. By these criteria the plants in the loam were large. In the sand the plants were growing less rapidly, while those in the chalk were small. The plants in the clay, though not as large as in the loam, were slightly larger than in the other soils. Plants in the loam were profusely branched to form dense bushes; those in the chalk were much less branched, and were lax and "thin." During the period of testing no clipping or pruning of the plants took place. Further data were collected after a total growing period in these soils of three and a half years.

*Lonicera nitida* after a period of three and a half years.

Soil.	Average height.	Average spread.	Length of largest branches.	Fresh weights.
	cms.	cms.	cms.	kgs.
Clay . . .	116	155	133	10.3
Loam . . .	143	118	135	8.8
Chalk . . .	97	64	102	1.2
Sand . . .	92	119	120	3.2

The plants in the chalk had made but little growth when compared with those in the other soils. They were smaller in height, in spread, and in the length of their branches; they weighed very little. The plants grown in the sandy soil were little better than those in the chalk. Plants from the clay were large, spreading widely, and possessed long branches. These plants were the heaviest when weighed. The plants in the loam were tall and densely branched, their leaves were well developed in every respect, being particularly large, dark green, and glossy. They appeared to be well supplied with nitrogen.

Although these plants were tall they did not spread quite so much as those in the clay, and they were not so heavy; they were about eight times as bulky as those grown in the chalk.

*Lonicera nitida* thrives well in a loam rich in organic matter, and grows as well, if not better, in a clay soil well supplied with potash but lacking the high nitrogen content of the loam. In the chalk, where the nitrogen was low, growth was poor. In the coarse sand, which had more nitrogen than the chalk, growth was also poor. This plant shows a preference for the heavier soils.

### *RHODODENDRON OBTUSUM* f. *AMOENUM*.

From a particularly promising variety of this species, many small plants were raised vegetatively, so that a clonal population was available. The object of the test was to see whether this plant can grow in a fully exposed situation, in various soils, under the local climatic conditions. Planting took place on April 7, 1932, the distance between the plants in the rows was one foot. Information collected five months after planting showed the differences in the growth-rate of the young plants.

*Rhododendron obtusum* five months after planting.

Soils.	Average length of new growth.	Leaves.
	cms.	
Clay . . .	2.30	Dull green.
Loam . . .	3.25	Brighter surface.
Chalk . . .	1.63	Brittle.
Sand . . .	2.50	

At this early stage the injurious effect of the chalk on the rate of growth was apparent, and the plants bore discoloured, brittle leaves. Plants in the loam had already outstripped those in other soils.

A year later it was possible to estimate the number of casualties and to observe the growth made by the surviving plants.

*Rhododendron obtusum* one year after planting.

Soil.	Percentage surviving 1 year.	Average height.	Average length of new growth of branches.
		cms.	cms.
Clay . . .	90	19.6	5.4
Loam . . .	87	22.8	6.4
Chalk . . .	58	18.0	3.9
Sand . . .	96	16.9	5.4

The establishment of the plants was satisfactory in the sand, loam and also in the clay soil, but nearly half of the plants in the chalk soil had died within one year. The largest plants were to be found in the loam soil, but the plants growing in the clay had made good progress. Those in the sand had not grown so well. The average length of the

new side-branches formed was much longer in the case of plants growing in the loam than in other soils. Those in clay and sand were equal in this respect, whilst short branches were produced on the plants in the chalk. Periodical examination of the plants was carried out for two more years, but as no good purpose will be served by presentation of intermediate data, the final estimations of growth only are shown after a growing period of three and a half years.

*Rhododendron obtusum* in various soils after three and a half years.

Soils.	Percentage of plants surviving.	Average height.	Average width of 'top.'	Leaves.	
				Maximum width.	Maximum length.
		cms.	cms.	cms.	cms.
Clay . . .	78	$27.2 \pm 0.4$	23.9	$0.8-1.2$	$1.7-2.0$
Loam . . .	80	$29.5 \pm 0.4$	51.0	$1.0-1.2$	$1.7-2.3$
Chalk . . .	—	$(18.5 \pm 0.3)$	(9.0)	—	—
Sand . . .	88	18.4	17.3	$0.3-0.4$	$0.7-0.8$

The number of plants surviving in clay, loam and sand was satisfactory, the highest number being in the sandy soil. No plants remained alive after three years in the chalk. The largest plants were in the loam soil where profusely branched small shrubs were obtained (fig. 44). The "spread" of the plant, as measured by the width of the crown, showed that there was little growth in the coarse sand, and not much more in the clay. In the loam the plants were about three times as large as those in the sand. The leaves of the plants in the loam were much longer and wider; as these leaves are almost elliptical, the area of the leaves of the former was slightly more than four times that of the leaves grown in the sand. This was a most striking difference, and as the leaf area affects the rate of photosynthesis, this difference was one of profound significance.

This plant can be grown successfully in exposed soil with no shelter or surface mulching provided the soil is fairly rich in nutrients and has a suitable mechanical composition including fine particles. On a coarse sand very little growth was made. None of the soils showed a distinctly acidic reaction, the loam in which the plants grew most vigorously approximated to neutrality—pH 6.7. This loam was free from carbonate of lime. It appears that provided the soil can retain moisture by its humus content (the loam contained only four per cent. humus) this species will grow quite well without mulches to prevent evaporation from the soil, even in seasons that are not propitious in this respect.

#### *RHODODENDRON PONTICUM.*

In order to obtain some check upon the behaviour of *R. obtusum* a test with *R. ponticum* was carried out. The plants used were seedlings of similar age; rigorous selection to ensure equality of size and development, as well as morphological uniformity, was practised before planting. The chosen plants appeared homogeneous. As with

*R. obtusum* no shade, artificial watering or surface mulching was given to the young plants.

*Rhododendron ponticum*.

Soil.	Percentages of surviving plants.		
	1 year.	2 years.	3 years.
Clay . . .	60	55	50
Loam . . .	60	50	40
Chalk . . .	30	20	10
Sand . . .	70	66	55

The number of plants surviving in the sand was higher than in the other soils. This was primarily due to the rapid establishment of the plants in this soil—closely related to its mechanical composition. In the clay and in the loam a number of plants died off. Few plants were expected to live long in the chalk and from the outset signs of chlorosis and poor growth were plainly visible.

*Rhododendron ponticum* three and a half years after planting.

Soil.	Average height.	Average spread of branches.	Leaf blade.	
			Maximum length.	Maximum width.
	cms.	cms.	cms.	cms.
Clay . . .	52.7 ± 0.8	40.6	8.6	3.1
Loam . . .	61.4 ± 0.8	62.3	10.4	3.6
Chalk . . .	24.0 ± 0.2	6.5	5.0	2.0
Sand . . .	44.3 ± 0.4	26.9	8.0	2.7

The plants in the chalk made no growth, while those in the sand were much smaller than those in the clay mixture and in the loam. The figures showing the spread of the branches form a striking indication of differences in growth—all the lateral growth took place after planting. The plants in the sand made less than half the growth of those in the clay. Differences in foliar development were apparent. The leaves of the few survivors in the chalk were yellow and brittle, and very small both in length and maximum width. Leaves of plants grown in the sand were smaller than those from plants in the loam or the clay. They had a lighter colour and were not so glossy on the upper surface as leaves from plants in loam. In size, both in length and width, they showed poor development. These observations, when examined with the chemical data from the soil analyses, undoubtedly indicate a condition of low nitrogen in the sandy soil. The available nitrogen had rapidly decreased in the sandy soil. In the loam, where the plants bore larger darker green leaves, the nitrogen content was higher—maintained by the slow decomposition of the humus in that soil. The leaves of the plants in the clay occupied an intermediate position between those from plants in the loam and



sand. Their colour was satisfactory as was their size. The chemical analyses made at the time of planting did not show a higher nitrogen content in the clay soil. The moisture estimations, however, showed that the soil retained more water, and particularly after a long period of dry weather (as shown on p. 256 of the 1934 JOURNAL) did the clay show to a marked advantage in this respect.

The plants were grown in the open exposed to full sunshine of the hot dry summers, and under these conditions satisfactory growth was made only in the loam and clay. Whilst the sandy soil proved a very suitable medium for successful early establishment of the plants growth was poor. The plants failed in chalk.

Compared with *R. obtusum*, *R. ponticum* proved more difficult to establish. Both species preferred the rich loam and the clay to the Bagshot sand. *R. obtusum* compared with *R. ponticum* very favourably in general hardiness and in the trying conditions of no shade and limited water supply—with hot unmulched surfaces of the soil. For gardens where such conditions obtain, *R. obtusum* is well worthy of extended planting as not only is it a very likely survivor, but it also grows and flowers well under such conditions.

### III.—GENTIANAS AND LILIES.

#### *GENTIANA ACAULIS* L.

Small plants were placed in the soils in April 1932, having been selected from a clonal group of plants of equal age. Four months after planting it was seen that the establishment had been successful in the chalk and loam and sand, and less successful in the clay.

*Gentiana acaulis* L. showing establishment and early growth.

Soil.	Percentage of plants surviving.	Average number of leaves per plant.	Leaf blade.		Leaf colour.
			Max. length.	Max. width.	
Clay . . .	53	7.5	cms. 2.1	cms. 0.6	Dark green Yellowish Light green
Loam . . .	80	9.2	3.2	1.1	
Chalk . . .	85	7.3	2.4	0.7	
Sand . . .	86	10.2	2.4	0.8	

From time to time the numbers of living plants decreased as the following figures show.

Soil.	Percentage of plants surviving.				
	August 1932	October 1932	July 1933	May 1934	April 1935
Clay . . .	44	42	36	36	8
Loam . . .	76	73	70	70	17
Chalk . . .	84	66	50	50	—
Sand . . .	82	76	74	74	—

The figures show that although the number of plants surviving in the clay was low there was not a great decrease when once the plants had started to grow. A gradual decline in numbers took place in the loam. In the chalk a sudden drop in the numbers occurred at the end of the hot dry summer months of 1932 when 18 per cent. of the plants died in a few months. In the sand also a gradual decline in numbers took place. Finally only a few plants remained in the clay and less than one in five persisted in the loam after three years.

The largest plants were produced in the loam; in the first year growth was more rapid in the sand than in the chalk or clay: this rapid progress was not maintained. Generally growth in the chalk was limited; the plants, however, did not appear to be suffering severely from chlorosis, though their leaves were slightly paler. Flower production was quite disappointing in all soils. In no year did any series of plants have on the average more than two flowers on one plant open at the same time. Flower production in the second and third years was equally good on plants in the chalk and sand, which produced nearly twice as many flowers as plants in the clay or loam. The flower production in the loam, and more especially in the clay, showed a tendency to be delayed until autumn. This was not observed so frequently in the light sand and in the chalk. Generally it did not appear as if differences in the soil factors governed flowering. The conclusion drawn was that climatic factors influence flowering; it may be that at higher altitudes with lower temperatures flowering would be "free." Whether the necessary climatic change from the Wisley exposed conditions of full sunshine can be brought about by shade alone seems very doubtful, for in the shade profuse flowering is not usual here. It is also unlikely that the daily period of light is the governing factor, for within a few miles of an unsuccessful garden, success may be obtained with this *Gentian*.

#### *GENTIANA SINO-ORNATA*.\*

A test with this species was similarly carried out. Three months after planting, the plants in the loam soil, richer in nitrogen and holding water by its humus content, had produced more and larger branches with longer leaves than in any other.

*Gentiana sino-ornata*.—Early growth.

Soil.	Percentage of plants established.	Average number of well-formed branches.	Average length of branches.	Average length of leaves.
Clay . .	63	6	cms. 5·2	cms. 1·5
Loam . .	90	7	7·1	2·1
Chalk . .	82	4	4·8	1·4
Sand . .	79	5	5·0	1·5

The plants in loam were dark green and more "succulent"; they contrasted with those in the chalk, which were light green, bore

\* A brief note on the behaviour of this species has appeared in the JOURNAL R.H.S. 59, p. 453, November 1934.



FIG. 44.—RHODODENDRON AMOENUM OBTUSUM.  
Plants grown in loam. Same scale as fig. 45.



FIG. 45.—*RHODODENDRON AMOENUM OBTUSUM*.  
Upper plants grown in clay, lower in sand. Same scale as fig. 44.

[To face p. 205.]

shorter leaves on stems having shorter internodes. The plants in the sand more closely resembled those in the chalk in their growth and habit, they too were "hard," and showed little elongation of the internodes. From the outset this species was highly susceptible to differences in moisture conditions and nitrogen supply. The number of plants established was lower in the clay mixture than in the other soils.

In the autumn after planting, counts were made of the flowers.

*Gentiana sino-ornata*.—Flowering first autumn.

Soil.	Percentage of plants surviving.	Percentage of survivors flowering.	Number of flowers produced.	Average number of flowers per plant on 21/9/32.
Clay . . .	60	82	43	2.4
Loam . . .	90	78	63	2.3
Chalk . . .	82	20	7	0.2
Sand . . .	79	52	27	1.0

The greatest number of flowers was produced by the plants in the loam, very few being produced by plants in the chalk and in the sand. In the first year whilst more than two flowers were produced on each plant in the clay and loam, only one was produced on the plants in the sand, and one on every five plants in the chalk. These figures show most clearly the very marked differences in the growth responses evoked by the soil conditions in this species. This difference became even more apparent as the plants grew older.

The persistence of the plants can be judged by the following figures.

*Gentiana sino-ornata*.

Soil.	Percentage of plants surviving.		
	1 year.	1½ years.	2½ years.
Clay . . .	62	55	5
Loam . . .	86	84	60
Chalk . . .	17	—	—
Sand . . .	66	66	—

After two hot and dry summers a few plants remained in the clay, many vigorous plants continued to flower in the loam. During the second year the plants in the sand died out, as did those in the chalk in the first year.

Generally it is seen that this species requires an adequate amount of water in the soil, as held by the humus in the loam. In the clay, which held the moisture better than the sand, the plants persisted longer than in sand. On the hot dry sand and chalk soils this plant was a failure. Flower production was correlated with growth, and as the plants grew larger many flowers were produced.

*Gentiana Cruciata.*

The plants used were selected seedlings which were planted in the soil in the spring. The identification of the species was checked on mature flowering plants and corroborated at Kew from herbarium material. The original seed sample came under another name.

*Gentiana Cruciata.*—Early growth.

Soil.	Percentage of plants established in 3 months' time.	Leaf blade.		Average number of leaves.
		Max. length.	Max. width.	
		cms.	cms.	
Clay . . .	76	5·1	2·7	6·4
Loam . . .	82	8·7	3·4	5·5
Chalk . . .	80	4·3	2·1	5·0
Sand . . .	94	3·9	2·3	5·7

The highest percentage of plants established was found in the sand. At the outset it was apparent that the plants growing in the loam possessed larger leaves. At this early phase of growth all the plants were unbranched, and in the number of leaves there was no significant difference between the series, but by the end of the first growing season, *i.e.* six months after planting, differences in the size of the plants were visible. The plants growing in the loam were the largest; the ratio of size was then approximately, loam 14, clay 11, sand 8, chalk 7; so that the larger leaf surface and the soil factors had soon produced an effect on general growth. A scrutiny was carried out of the growth made by the mature plants when three years old. On each plant many observations were made, involving measurements or counts, so that the figures here quoted are average figures from several hundred observations; there is a very high probability that the differences recorded are statistically significant.

*Gentiana Cruciata.*—Plants three years old.

Soil.	Percentage of plants surviving.	Average number of branches on plant.	Average number of side (secondary) branches.	Average length of branches.	Spread of branches.	Number of whorls of fruits.
				cms.	cms.	
Clay .	36	18·7	3·3	28·5 ± 0·9	35·2 ± 0·7	6·8
Loam	63	16·0	6·4	32·5	54·4	7·0
Chalk	60	17·5	3·1	14·6	36·9	3·5
Sand	20	4·0	1·2	21·2	31·0	2·9

The plants persisted well in the loam and in the chalk, but not in the other soils. Very few remained in the sand. The largest plants grew in the loam. Here flowering continued late into the autumn, whilst in the chalk and sand the fruits developed much earlier. There was also a marked difference in form and habit. Plants growing in the heavy loam could be described as "semi-erect," their branches

formed at an acute angle to the ground. Plants in the chalk and sand were erect, having branches at right angles to the soil surface, while those in the clay mixture were intermediate in this respect.

This is a very "plastic" plant with wide potentialities ; its form and behaviour are both readily modified by soil conditions. It persists well in chalk, but when planted in a rich loam soil grows much larger, produces many more branches, bears more flowers and fruits and the flowering period is prolonged. On a hot dry sand the number persisting was low ; the addition of clay to the sand, whilst causing improvement, did not bring the number up to that in fibrous loam or chalk.

#### *Gentiana tibetica.*

Four other series of reputed species of Gentians were planted in the soils, but examination of mature plants showed that they were all *G. tibetica*. Establishment in all soils was satisfactory, though after a year there were rather fewer plants remaining in the chalk ; the other soils contained approximately the same number of plants. Generally, in growth, there was very little difference between the series : all flowered and fruited well and grew to approximately the same size in the earlier years. Even after three years the differences observed were small and would not strike a casual observer. This coarser growing species was tolerant of all the soils ; the soil conditions had apparently very little effect on such a vigorous plant.

Within the genus (*Gentiana*) the species tested have reacted distinctly and individually. *G. acaulis* proved to be less easy to establish in the clay ; *G. sino-ornata* preferred the loam and died out in the chalk ; *G. cruciata*, a remarkably plastic plant, persisted in the chalk, died out rapidly in the sand, and grew vigorously in the loam ; whilst *G. tibetica* grew well in all soils, though it did not persist so well in the chalk.

#### *Nomocharis pardanthina* (Farrer's type).

Small bulbs with a few contractile roots were planted in November : they were selected from a seed pan into which the seed had been sown a year earlier. In the spring small leaves were developed and the plants survived until June. After "dying down" in early July, no further development took place. The following observations show the early establishment.

#### *Nomocharis pardanthina*.—Establishment.

Soil.	Percentage of plants with leaf visible, May.	Percentage surviving until June.
Clay . . .	16·6	11
Loam . . .	33·3	24
Chalk . . .	24·2	16
Sand . . .	40·7	37

None of the soils permitted growth. This plant needs shade with lower temperatures and abundant moisture both in the air and in the soil. Further trials and tests are being made in the hope that a suitable position for this plant may be found at Wisley.

### *Lilies.*

The following species were tried: *Lilium candidum* (Salonika variety), *L. Hansonii*, *L. Henryi*, *L. regale*, *L. tigrinum*. Small bulbils were planted with great care in the autumn, every endeavour being made to prevent damage to the young roots. In the subsequent spring the general establishment of the species was apparently satisfactory, *L. Hansonii* and *candidum* proving the best in this respect, with *L. tigrinum* almost as successful. There was little to choose between the soils, but the slight differences were in favour of the sandy soil, particularly with *L. Henryi*, *L. regale* and *L. tigrinum*. *L. Hansonii*, *L. candidum* and *L. tigrinum* continued to grow, but *L. Henryi* and *L. regale* were quickly killed by the hot dry conditions of no shade, and no plant of these two species survived into the second year. With *L. candidum* the few surviving plants appeared to be of a better size in the sand: they flowered in the second year and bore fruits and seeds. With *L. tigrinum* the largest plants were in the loam soil. *L. Hansonii* also did better in the loam, but success was limited.

Evidently the differences in soil conditions were not the primary deciding factor of success with these Lilies, other factors than soil conditions were more important. The limited success of *L. tigrinum* in the loam pointed to adequate soil moisture as a requisite for growth.

These results bear out those obtained from the soil survey made for the Lily Conference (Lily Year Book, 1933). In general, climatic conditions, other than soil conditions, influence the failure or success of Lilies.

I am indebted to Mr. N. K. GOULD to whom I express my thanks for the photographs.



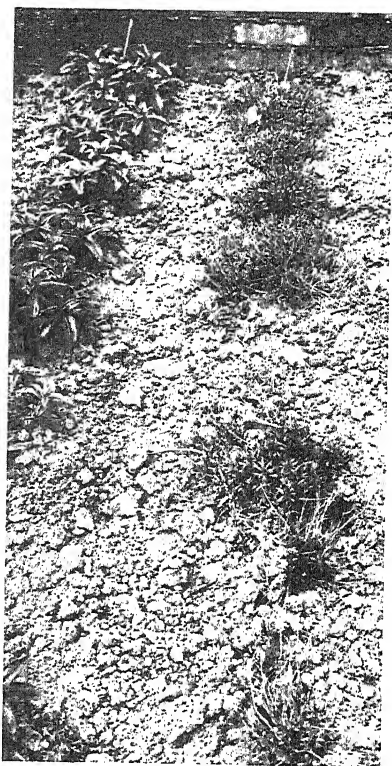


FIG. 46.—*GENTIANA CRUCIATA* (on left) AND *G. SINO-ORNATA*.  
 Plants in clay. Plants in loam.

[To face p. 208.

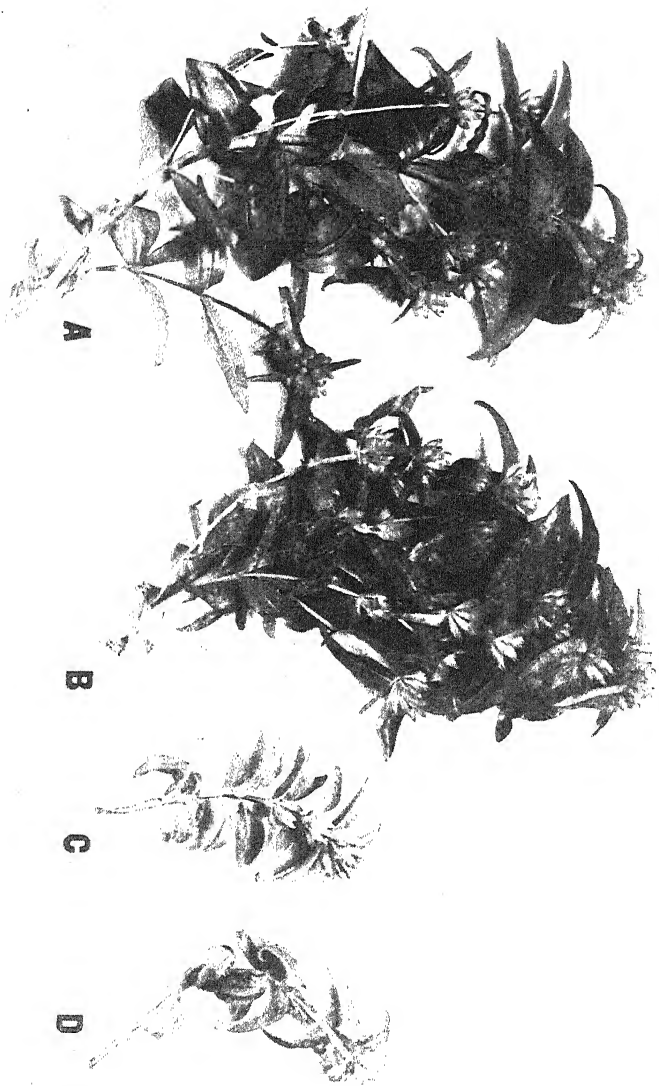


Fig. 47.—*GENTIANA CRUCIATA*.

A and B, plants with side-branches, from loam. C and D, plants from chalk soil.

## GROWING ROSES UNDER GLASS.

By CHARLES H. RIGG, F.R.H.S.

[Read March 24, 1936; Mr. H. R. DARLINGTON in the Chair.]

I VERY much appreciate the honour your Society has done me in asking me to give this talk on Growing Roses under Glass, and I shall be delighted to tell you with all diffidence all I know about the subject.

Growing roses under glass is by many considered an esoteric science, difficult to master and expensive to achieve and necessitating a great deal of work and worry. It is, of course, nothing of the kind, and any amateur with a greenhouse designed on the right lines and which can be moderately heated for a few weeks of the year can grow roses of the finest quality under glass. It is this fine quality and perfection of form obtainable under glass which makes it so well worth doing, and it is to me a matter for surprise that more amateurs do not go in for this method of growing roses. By no other means can they be grown so free from disease, so perfect in form, and with every item of cultivation so absolutely under the control of the cultivator.

Those of us who grow roses extensively in the garden know so well the practical impossibility of achieving out of doors any measure of control over weather conditions or disease, and our efforts are one long weary struggle to produce perfect blooms against the ravages of Nature. Moreover, the man who has roses in his heart all the time will want them in a more practical form for as many months of the year as possible, and by growing them under glass his rose season can be prolonged to nine months of the year. In fact, it is possible, with the aid of a greenhouse and a few garden frames, to have roses all the year round. I am, however, for the purpose of this paper, assuming that those I am addressing require roses under glass during the spring and early summer before the garden roses appear, and I also venture to hope that at least some of you are ambitious enough to want to grow roses of such quality and beauty as will enable you to compete at the spring show of the National Rose Society.

To obtain the very best results the kind of structure in which the roses are housed is important. Any kind of greenhouse can, of course, be used, but to obtain the best results it is well worth while to build a special house or houses. In my early days of growing roses under glass I had but very moderate success, mainly, I think, because I adapted an old and unsuitable greenhouse for the purpose, and also attempted to grow other flowers with the roses. At present I have five greenhouses, four of which have been specially built for rose growing, but as they are used for the roses only for seven months of the year they are available for other purposes from June until

November. I should say here, that all my roses are grown in pots, and I consider this a better method than planting them out in borders in the greenhouse, as by this means roses that are not doing well can be easily discarded, the collection can be added to at any time, and roses can be moved about from house to house and brought into bloom more quickly, if that is desired, by bringing them into higher temperatures. Moreover—and this is very important—the roses can be turned out of doors during the late summer to ripen off their wood and get ready for next year's forcing. At that time the houses, unless they are to be used for other purposes, can be thoroughly cleaned, repainted and disinfected and got ready for the next season.

The following structural particulars may be useful and of interest. Each house is 30 feet long and 16 feet wide, and with the exception of one house, which has a brick foundation and was originally built for growing cucumbers, all the houses are, for reasons of economy, built on a wood foundation superimposed on one layer of bricks. The height to the eaves is 5 feet and to the ridge 11 feet. Practically the whole of the top on each side of the roof consists of ventilators, and these are all independently operated by casement cords. The whole of each side of the houses also consists of ventilators 5 feet 6 inches wide working independently, so that with these and the top lights the house can be practically thrown right open. In practice, however, during the time the heat is put on only the top ventilators are ever opened, so as to avoid any possibility of draught. The side ventilators are used in the early summer when the heat is turned off and the roses are being gradually hardened off, and in the winter when the roses are first put in, when it is necessary to give as much air as possible. The whole design of the ventilation is to give plenty of air with the minimum of draughts.

With regard to the internal arrangements, three of the houses are fitted with wood staging 3 feet 6 inches wide on each side. This staging is for bush roses in pots. The centre is left empty and covered with cinders to take standard roses in pots. Two houses have no staging at all, the entire floor space being covered with cinders and being used for standard roses in pots. No roses are planted out in the houses except the old tea rose 'Maréchal Niel.' This is planted out in the border of three of the houses and trained on the roof. Water is supplied by a 150-gallon galvanized iron tank inside each house and is drawn from the roof, so a more or less continuous supply of soft water of the same temperature as the house is available. To preserve the colour of the roses (a very important matter) and to prevent wilting, shading during hot weather is essential, and external blinds made of wooden slats are fitted to each house. These are made by Tidmarsh & Sons, Laycock Street, N. 1, and are somewhat expensive, but with care last for a long time and are well worth while. These blinds are also useful for keeping out a certain amount of frost in the winter before the fires are lighted. They also allow a current of air to pass between the glass and the shading material during the

heat of a summer day. In my opinion movable blinds are infinitely better than shading by lime wash, as they can be adjusted to meet every condition with the minimum of labour.

Heating is supplied by two central boilers supplying three and two houses respectively. I find that by this means a slightly better control is obtained than by having one central boiler and furnace.

I have had some photographs prepared of my houses and two are illustrated in fig. 48. The illustration may possibly be helpful if you contemplate building a rose house. I may add that the houses were built by our village builder and cost approximately £140 each.

The next matter to consider is how to obtain and start a collection of pot-roses. There are several ways of doing this. First, the roses may be dug up from one's own garden and potted up in October; secondly, they may be bought from dealers in the ordinary way and potted up; thirdly, they may be purchased from nurseries already established in pots; and, fourthly, they may be budded on suitable stocks which have been already planted and established in pots. Now in my experience the first and the last methods are undoubtedly the best, and are the methods I personally adopt. That is to say I pot up my own roses from my own ground or bud them on stocks already established in pots. I must, however, point out that roses newly potted up from the open ground cannot be forced during the first year of pot life, and if the embryo grower of roses under glass is in a hurry to get on with the job, and if immediate results are required, there will be nothing for it but to buy roses which are already established in pots and can at once be forced. This will probably not be very satisfactory, as roses already established in pots and sold by nurserymen have, as often as not, been over-forced and over-fed either for the cut-flower trade or for exhibition purposes, and roses so forced or over-fed are seldom much good afterwards. One thing, moreover, is certain, and that is they will be very expensive to buy and if they have to come some distance there will also be the cost of transport. Incidentally, if this method of starting a collection is adopted it is important not to buy the roses unless they have been budded—not grafted—and unless they are established in 7-inch or 8-inch pots. Grafted roses cannot compare with budded roses—the latter are superior in every way, more particularly in their root growth, and it is these stronger roots which will eventually produce strong growth and beautiful blooms.

If this method of starting a collection is resorted to, it will be necessary when the roses are received to examine the pots for drainage and to repot the trees in a good compost, and to manure and feed in the way I will describe later.

When ordering roses from the open ground for potting up it is as well to say, when giving the order, for what purpose they are required and insist upon having roses budded low down as they are then easier to pot up. Also ask for early delivery—not later than the last week in October would be a suitable time. In the same way, if you are

potting up from your own garden roses, choose preferably those plants which are budded low down on the roots. If you are potting up from your own stock this operation can be done rather earlier—say about the middle of October—as the roses would presumably be out of the ground only for a short time.

I now want to refer to the last, and to my mind the best, method of starting a collection, and that is by budding stocks already established in pots. The stocks may be young standard briars, rugosa standards, dwarf seedling or cutting briars. The stocks should be potted up early in the autumn, and for standards the height should be reduced to about 4 feet. They can be left out in the open during the winter where they will require no attention and may be budded the following summer.

The rugosa standard stocks must be budded in June and not later, as the sap in this stock begins to go back early and after the end of June you might as well try to bud the leg of a table. The briars, whether standard, seedling or cutting, can be budded any time from June to September. The stocks must be kept well watered and sprayed so as to keep the wood in good budding condition. After budding the stocks can be left in the open during the late summer and autumn and should be brought under glass about mid-December, when the wild stock can be cut off just above the bud. In April of the following year, or eighteen months after potting up the stocks, you should have the finest quality roses you have ever seen, every bloom should be a thing of supreme quality and beauty. The drawback to this method of starting a collection is the lapse of time before obtaining flowers, but there is really no method to equal it.

Whether the roses are bought already established in pots, or whether they are potted up in the autumn from one's own outdoor collection or bought from the nurseries, or whether they are wild stocks which are eventually to be budded in pots, the compost in which they are to be grown is of primary importance. It is advisable to prepare this compost at least six months before it is required, as it should be constantly turned over so that the various ingredients are thoroughly mixed together and have had time to become thoroughly sweetened by exposure to sun and air. Composts recommended for pot-roses vary considerably and every grower has his own favourite mixture. The ideal basis, however, of any mixture is the top spit from an old pasture, but if this is not obtainable any really good garden soil will suffice. This soil or top spit should be riddled through a fine sieve to get rid of stones and should be mixed with a liberal quantity of old matured manure, wood ashes and bonemeal. To the whole should be added a small quantity of soot. If it is not possible to obtain real wood ashes a small quantity of sulphate of potash may be added to the heap, but wood ashes are preferable, as although their percentage of potash is low compared with sulphate of potash they have a better mechanical action on the soil, assisting to improve its texture and keep it open.

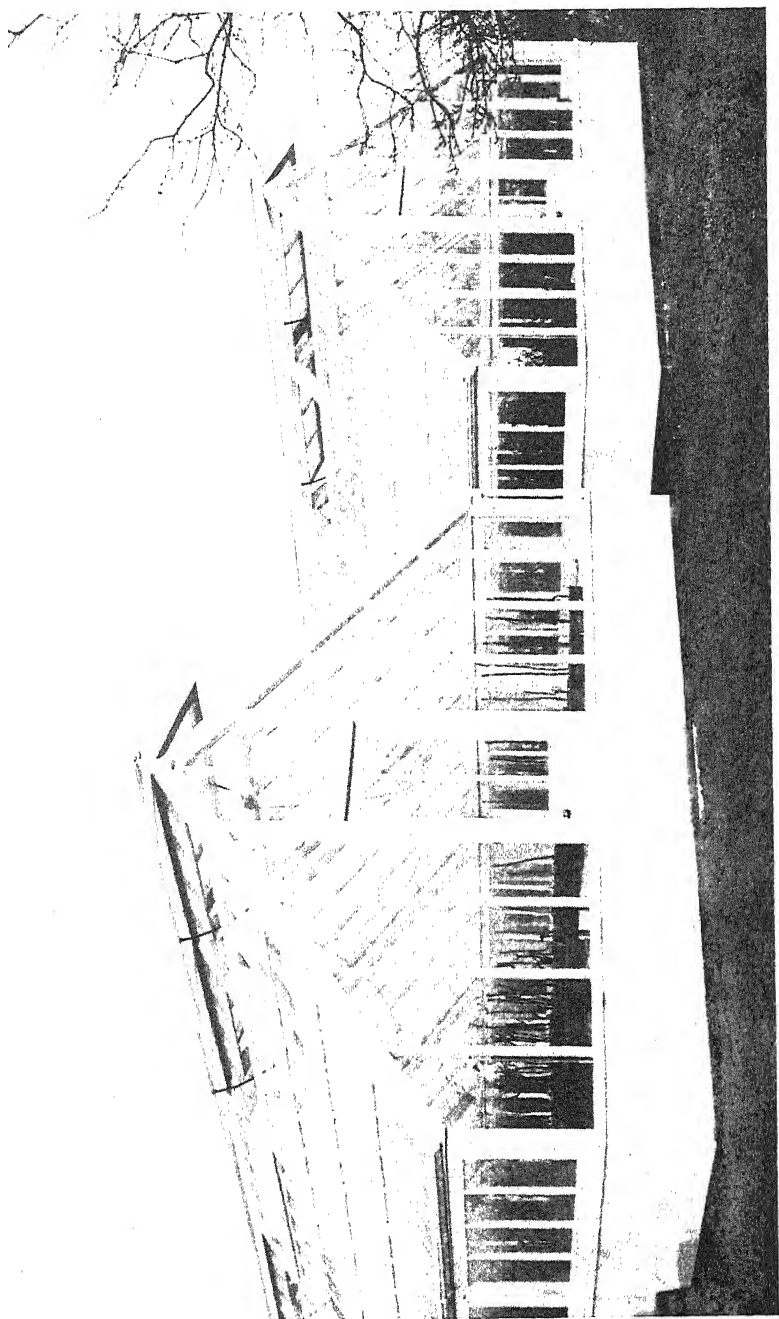


FIG. 48.—TYPE OF GREENHOUSE USED AT STEEPLE MORDEN.

[To face p. 212.]



FIG. 49.—ROSE AFTER TWO YEARS OF POT LIFE, SHOWING ROOTS GOING  
IN SEARCH OF FOOD.



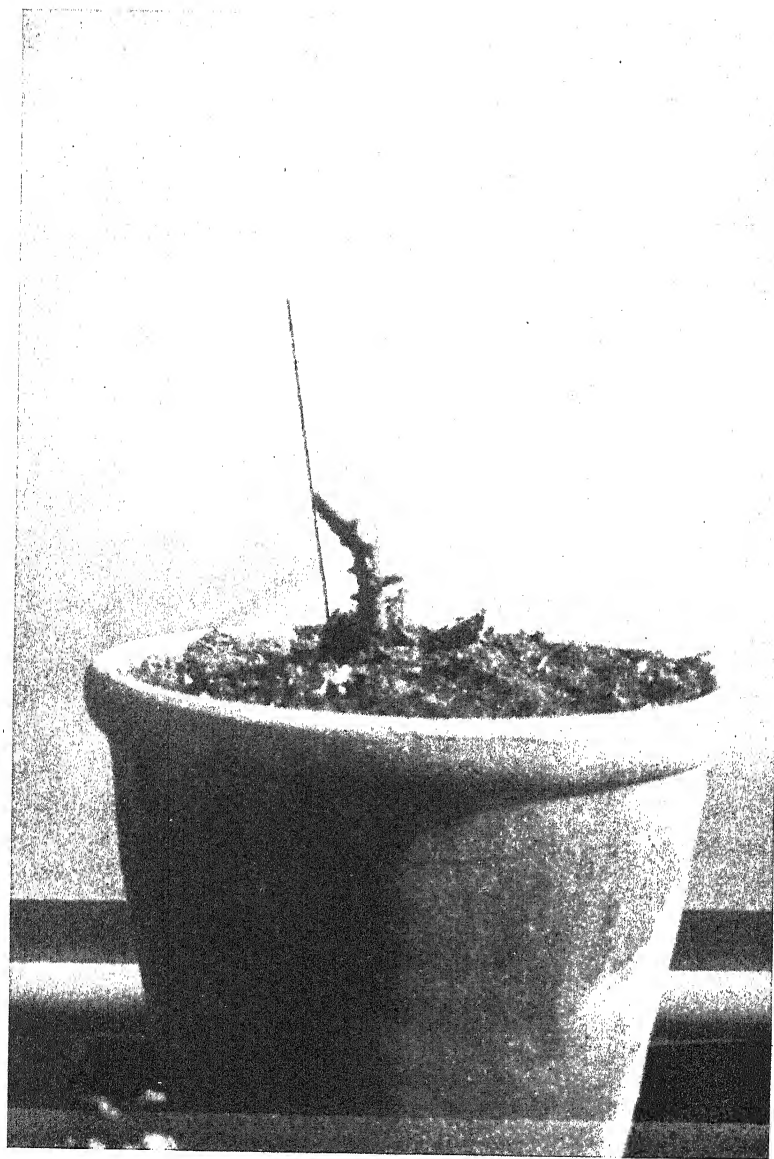


FIG. 50.—H.T. ROSE AFTER PRUNING.

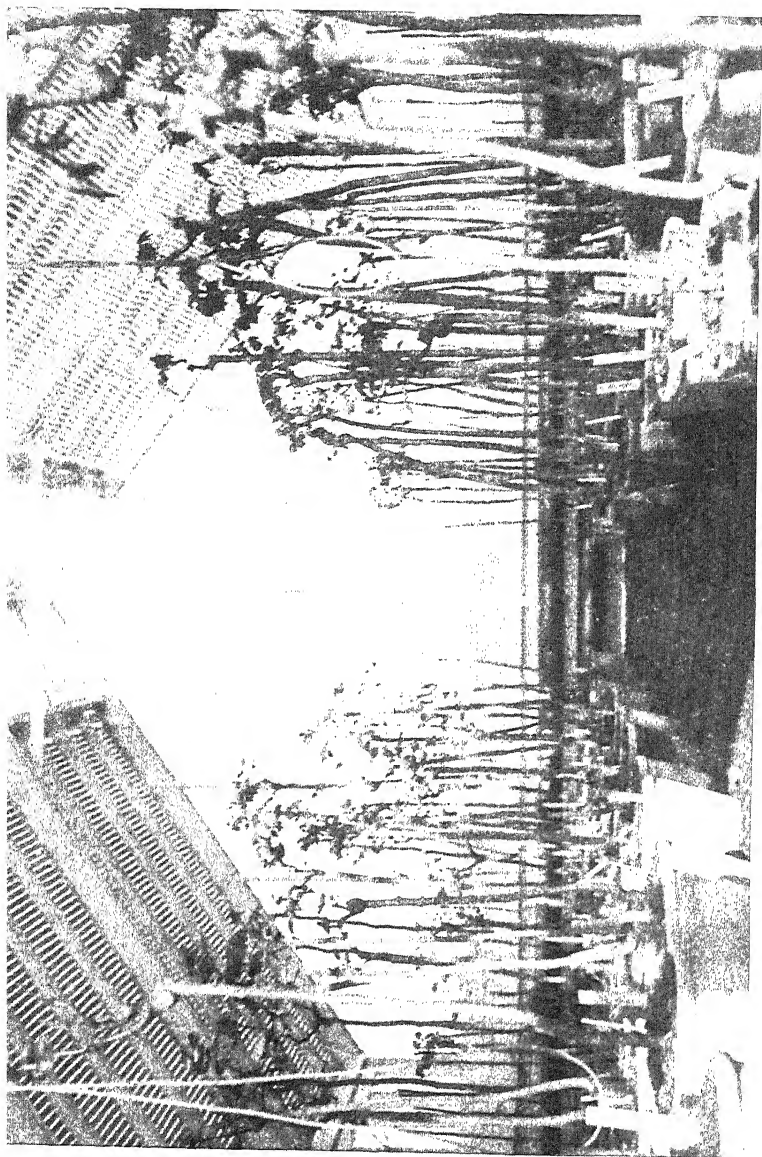


FIG. 51.—STANDARD ROSES EIGHT WEEKS AFTER PRUNING.

[To face p. 213.]

It is unnecessary to emphasize that the manure should be at least twelve months old and matured to such a degree that it is offensive neither to the nose nor to the touch. It may not be out of place here to refer to the danger nowadays in using manure from slaughter-houses and farmyards where disinfectants are used for washing down the yards and outhouses. I believe that many thousands of roses are killed annually by the use of this class of manure. I prefer to use pig manure from our own pig-styes, as then there is no question of any disinfectant having been used and the age of the manure is definitely known.

It must be understood that this mixture which I have described is the general compost to be used for potting up the roses or stocks, but something more than this is required if the roses are to do really well. In lifting and potting up roses from one's own garden the procedure we adopt is as follows. The trees are lifted as early as possible in the autumn, generally after the first frosty night in October. The leaves should all be removed before the roses are lifted as this prevents the plants drying out. All unnecessary and weak wood should be removed and the roots pruned somewhat severely so that the plant will go easily into a 7-inch pot. In the bottom of the pot place two or three large crocks; on the top of these place a good layer of  $\frac{1}{2}$ -inch bones; then pack closely into the pot a few lumps of chopped-up matured turf and on the top of this a layer of well-matured manure, covering this with about an inch of the potting compost. The pot should then be about half full. On this plant your rose, ramming down the compost all round the roots and to finish off give a good sprinkling of fine bonemeal, then a very thin layer of the manure and cover over with a thin layer of compost. The formula will then be, starting from the bottom, crocks,  $\frac{1}{2}$ -inch bones, chopped turf, manure, compost, then the rose, then again compost, bonemeal, manure, compost. This will give sufficient nutrition for all newly planted roses during their first year of pot life. Nothing else except pure water should be given.

The same process is adopted for roses bought in or for stocks, whether rugosa or brier, which are being potted up for budding the following summer.

If you have any doubt as to whether roses like this method of potting and feeding, figure 49 shows you one of my roses which has been established in a pot for two years or more. I think it proves that this way of treating pot plants is satisfactory. You will see that the roots have gone down and up in search of food and they appear particularly anxious to get through the manure to the bones and so the latter seem to serve the double purpose of giving additional drainage and fertilizing properties.

At this stage I must emphasize that newly potted-up roses must on no account be forced the first year. They can be left in a sheltered position out of doors, be pruned at the same time as the outdoor roses, and with ordinary care will give a few blooms during the summer months. In the autumn, when they have been in their pots for

twelve months, they can be treated as established plants and forced as desired.

The same treatment, however, does not apply to budded stocks, or what we call maidens. Some people think that budded stocks, that is to say stocks budded in pots the previous June or July, should not be forced the first spring after budding, but I entirely disagree with this view. It is necessary to bear in mind that the stock has already been established a year in the pot and the bottom of the pot should be full of roots. The stock is therefore in exactly the same condition it would be in if it had been budded in the open ground, and we all know that budded stocks out of doors can, the first summer after budding, be fed and forced with fertilizers and treated as established trees. Anyhow, my experience is that budded stocks in pots can be forced the first spring after budding with excellent results, but of course it is necessary to remember that roses grown under glass in the way I am describing are forced only very slightly.

The next question we have to deal with is the correct time to bring the established roses and budded stocks under glass. As my roses are for the most part required for exhibition at the spring show of the National Rose Society, I have to keep the date of this show in mind. Speaking generally, the roses may be housed about the beginning of December if blooms are required in March, April and May. After they are brought into the houses all watering must be withheld and the plant allowed to become almost bone-dry. The leaves will then turn brown and fall and the plant will quickly ripen off. During this period, namely from the time the roses are brought under glass in December until the middle of January, all the ventilators should be kept wide open night and day and if several degrees of frost are registered no harm will be done, conditions corresponding to the weather conditions out of doors in March.

Pruning is the next important step. The bulk of my plants are usually pruned towards the end of the year, but if blooms are required for any particular date, such as the National Rose Society's spring show, then special consideration has to be given to early or late varieties. Most varieties take roughly 14 weeks to come into bloom from the date of pruning, but some take as long as 16 weeks. A few roses which take a long time to come to bloom may be mentioned here. They are 'Julien Potin,' 'Mrs. Foley Hobbs,' 'Lal,' 'Mrs. Henry Bowles,' 'Mrs. Charles Lamplough,' 'Edel,' 'Victor Tschendorf,' 'Olive Cook,' 'Barbara Richards,' 'Souvenir de Claudius Pernet,' 'Mrs. Geo. Marriot,' 'Mrs. Barraclough,' 'Caledonia,' 'Mrs. Elisha Hicks,' and most of the roses with 45 to 50 petals or more, with some exceptions. These varieties should be pruned at least 16 weeks before they are required to bloom, that is to say 112 days.

It is, of course, possible to accelerate the time of blooming by putting on additional heat, but this is a course to be deprecated, as it tends to produce weak growth and poor blooms; slow and steady should be the rule. In an attempt to prolong the flowering season of any particular variety some may be pruned earlier than others, but

there is always a tendency for the late pruned ones to catch up with the others pruned earlier. If you have several houses it is, of course, an easy matter to start the fires in one house earlier than in another, and so prolong the period of flowering.

Some varieties which come into bloom quickly are 'Rev. Page Roberts,' 'Maud Cumming,' 'Golden Emblem,' 'Mabel Morse,' 'Lord Allenby,' 'W. E. Chaplin,' 'Mrs. Sam McGredy,' 'Arthur Cook,' 'James Rea,' 'Wm. Shean,' 'Mrs. Henry Morse,' 'Bessie Chaplin,' and all the very thin varieties.

It is a curious fact that some of the heavy roses which one would think would be slow in coming to maturity actually behave in exactly the opposite manner.

There is very little art in pruning pot-roses. It is essential, however, that they should be pruned very severely, otherwise the plant will grow up and up and become leggy and difficult to manage. I prune all varieties alike, that is to say I cut them all back to the last one or two buds of the previous year's growth. In other words I cut right back every year to the old wood (figs. 50 and 51). Even with this drastic pruning many of the plants grow excessively tall, but strong growth and good blooms are the result. All pruning should be completed by the end of the year and *then* commences the critical period of cultivation. From this point the utmost care and attention to detail must be given or disastrous results will follow.

As I have already said, from the time the roses are put under glass to the middle of January no artificial heat is necessary. In fact the top ventilators should still be kept open during this period and even if there is a sharp frost at night it will do no harm. Towards the end of the month during bright and sunny days still more ventilation may be given, but all ventilation must be given from the roof and from now onwards the side ventilators should not be used.

The aim at this stage is to make the plants break into growth very slowly—to hurry them at all would be fatal.

About the end of January the roses will be breaking into life and when this is apparent the ventilation must be more closely watched and frost must be excluded with the help of a little artificial heat at night. On no account should the ventilators be entirely closed, but the temperature must not be allowed to fall below 45°. Each house should be supplied with a thermometer recording the maximum and minimum temperatures during the day and night. The aim at this time should be to keep a minimum temperature of 45° at night and a maximum of 60° during the day, but even on a bright sunny day in late January, with the sun on the house, the temperature will often run up to 65° to 70°. It is on these occasions that the wooden blinds will be useful, but it is not advisable to exclude too much light and sunshine at this stage.

During March the night temperature should not be allowed to fall below 60° and a great effort should be made to keep the day temperature between 60° and 70°.

It is fairly easy to regulate the temperature during February and

March, but the real difficulty will commence towards the end of March and during April when there will be occasions when the thermometer will run up to  $100^{\circ}$  during the middle of the day and if you are not careful with your stoking will go down again to  $50^{\circ}$  at night-time. It is at this time that all your skill as a rose grower will be called for, in fact you will begin to wonder whether you are engaged in a game of skill or of chance. It is then that judgment, experience and knowledge will avail.

Violent fluctuations are strictly to be avoided as a bad attack of mildew is inevitable if the temperature is allowed to run up during the day and this is counteracted by opening the ventilators and allowing a rush of cold air to come into the house. An endeavour should be made to secure an average temperature and to adjust matters slowly to the desired normal.

It is at the period when heat is first put on in the houses that it is advisable to help in guarding against an attack of mildew by painting the hot-water pipes with a sulphur lime wash, which I will refer to again when I come to deal with diseases of roses under glass. With care in ventilation and the sulphur wash referred to no trace of mildew or black spot should ever be seen.

From the time the roses are pruned in December until the end of January the plants should be sprayed at least once a day and a slight addition of Abol to the water will clean up the plants and help to destroy any lurking germs of disease.

Up to now the plants should have been kept on the dry side. A pot-rose requires moisture only when it is putting on foliage, consequently the greater the amount of foliage the more the watering can should be used, and when it is used it should be a thorough soaking and not just a wetting of the soil. The best time to water is in the morning and it is important that the water should be of the same temperature as the house. To make sure of this, a large tank which collects rain-water from the roof, which I have already referred to, is installed in each house. My experience is that, at the time of year the roses are under glass—namely the springtime—it is very unusual for this supply to fail.

Early in February the plants will be in very active growth and a daily change will be seen (fig. 51). Watering with weak manure water may now begin. I believe in giving almost daily waterings of very weak manure water made from cow or pig manure and soot. Towards the end of the month, weekly waterings with chemical manures are given and I believe that the scientific administration of these chemical manures is the secret of winning prizes at the National Rose Show.

Different growers have different formulas, but as my roses have been fairly successful at the shows perhaps my own formula may be of some interest. It consists of half an ounce of nitrate of ammonia and half an ounce of phosphate of potash to every two gallons of water. This is given gradually at first once a week, then twice a week and

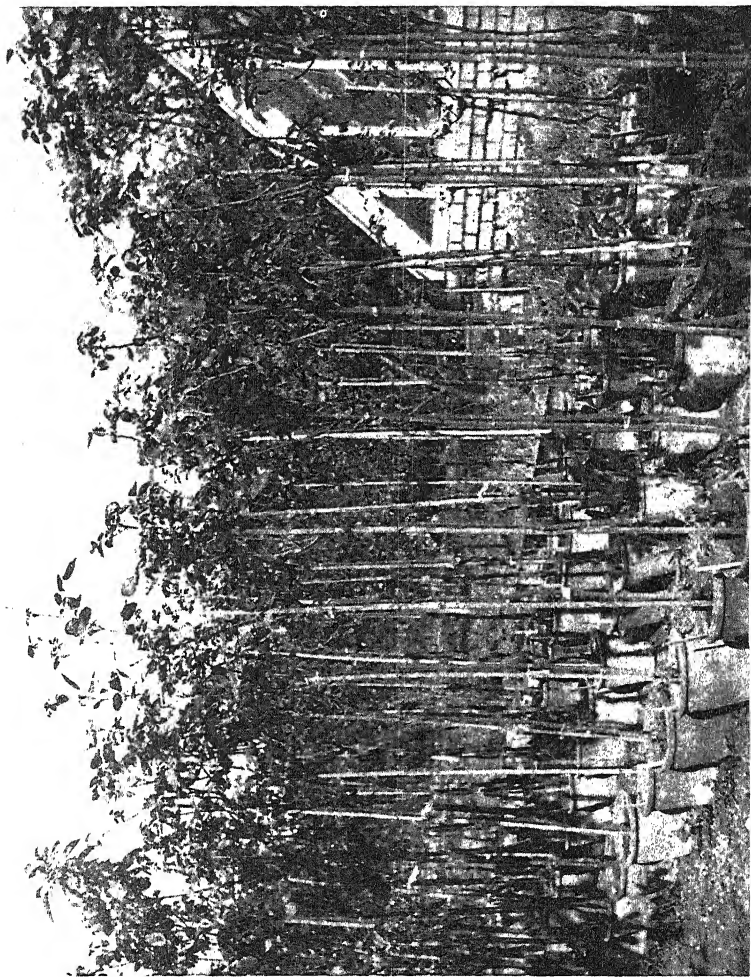


FIG. 52.—ROSES RIPENING OFF OUT OF DOORS.



FIG. 53 —H.T. ROSE BEFORE PRUNING.

[To face p. 217.



later, as flower buds develop, as often as three times a week. If the roses are at all backward for the show it is surprising how they can be brought on by several doses of this tonic.

Nitrate of ammonia is the richest of the nitrogenous fertilizers and is quickly absorbed by the plant. It contains  $35\frac{1}{2}$  per cent. of nitrogen, equivalent to  $42\frac{1}{2}$  per cent. of ammonia. Phosphate of potash contains two parts of potash to one of phosphoric acid, is a neutral soluble substance and is also immediately absorbed by the growing plant. It will be seen from this that the fertilizer used furnishes large quantities of nitrogen, phosphates and potash, and for providing superb flowers it is unrivalled.

During the active growing season a strict watch must be kept for disease and insect pests. One of the great advantages of growing roses under glass is the almost complete control one has over mildew and other diseases, and it is this freedom from disease which makes the strong clean foliage of roses grown under glass one of their great attractions. For some years past I have hardly seen a trace of mildew, black spot, or rust on my roses, and greenflies and other insect pests are practically unknown. So far as mildew and other diseases attacking the leaf and stalks of roses are concerned, these are kept in abeyance by painting a section of the hot-water pipes with a wash containing sulphur and lime. This wash is quite easy to make and consists of placing two or three lumps of quicklime in a bucket of water and adding a pound or two of flowers of sulphur. Only a small section, some three or four feet of pipes, should be painted and the ventilators should be kept slightly open. The heat from the pipes will cause mild fumes to be given off from the sulphur which will be a perpetual cleansing and sterilizing agent. It is important to note that if too great an extent of piping is painted with sulphur and the house is kept closed there would be a distinct danger of damage to the rose foliage and to the plant; in fact, some years ago I had a whole house of roses destroyed for the season by a gardener who was careless in this respect, so it is advisable to move cautiously. Before the fires are lighted it is, of course, useless to paint the pipes with sulphur, but the appearance of the foliage practically coincides with the lighting of the greenhouse fires. Until the fires are lighted good results are obtained by washing down the walls and staging with the same preparation so as to kill any germs there may be.

In addition to the sulphur treatment, spraying with Abol is continued twice daily until the buds show colour, when all spraying is discontinued. Some preparations, which have recently been advertised as sprays for roses, are best not used under glass as they leave a grey coating on the leaves which goes a long way to destroy the beauty of the foliage.

If greenflies or other insect pests appear they must be immediately destroyed and this can be done by fumigating the houses with auto-shreds. Fumigating once or twice during the growing season will probably be quite sufficient.

Caterpillars can, I am afraid, only be destroyed by hand picking—a very unpleasant but necessary job.

The next important item of cultivation is thinning out and disbudding. If good blooms are required, this should be somewhat ruthless. Anyhow, it is important that there should be no overcrowding. I believe in thinning out and disbudding very gradually. In the first place and starting directly the buds—by which I mean the eyes and not the flower buds—begin to plump up, I rub out all buds growing on the inside, that is to say all buds which would produce a shoot growing into the middle of the plant. By this the centre of the plant is kept open. The rest of the buds and shoots are gradually reduced and only three or four shoots eventually allowed to develop. If this process of thinning out is done gradually there will be no check to the root action of the plant, and the result will be fine strong stems furnished with beautifully healthy foliage and perfect flower buds. The flower buds should be reduced to one central bud unless the blooms are required merely for decoration when two or more flower buds may be allowed to develop, but I think this is a mistake and I always disbud to one central bud.

Towards the end of March or early in April the result of one's labour should become apparent in superb blooms of a quality and freshness impossible in the open garden. Moreover, as there is no wind or rain or atmospheric troubles of any kind to damage the blooms, they remain for a long time on the plant, in fact the heavy blooms will remain in good condition for as long as a week. It is delightful to be able to study and enjoy the characteristics of each rose under such conditions, and it is surprising how many roses develop a strong perfume under glass which is entirely lost when grown in the garden.

The roses will go on giving beautiful blooms for a month or six weeks, and after the first blooming may be cut back rather severely to about one half the length of the shoots when they will break again and give a second crop, but this second crop will not be nearly as good as the first. For my part I never allow the roses to bloom a second time as I think it weakens them and spoils their constitution.

Perhaps here I should say that I hope you will bear in mind that my remarks are primarily intended for amateur growers, and not for professional and trade growers who, I imagine, could learn nothing from me. The trade grower would look upon the matter from another angle. In the United States, and I think in this country also, the trade figure the cost of production under glass by the number of commercial flowers with 12-inch stems minimum per plant per 12 months with 10 months' production and 2 months' rest.

In America roses are grown on a tremendous scale under glass for the cut-flower trade, and the rose 'Talisman' has raised the record to 60 flowers a plant and the new rose 'Souvenir,' a yellow sport of 'Talisman,' gives, I am told, as many as 65 flowers a plant. When 'Souvenir de Claudius Pernet' proved to be an exceptionally valuable

forcing rose, but with a high cost of production, florists referred to it because of its cost, colour and quality, as the Champagne of Roses. So when a friend of mine discovered the rose known now as 'President Charles Hain,' but which was then unnamed, he saw in it the possibility of a great forcing rose of the 'Claudius' class and because of its size he said to his friends, "If 'Claudius' is 'Champagne' this is a 'Magnum,'" and so it was first called 'Magnum Pernet' in the United States. The rose eventually failed as a forcing rose for trade purposes as its cost of production was too high for present times.

To come back to my own roses under glass: after they have given their wonderful first crop I let them grow as they will and gradually cool them off preparatory to removal to the open air in June. In that month they are all taken outside and stood in rows in a fairly open part of the garden and allowed to ripen off (fig. 52). I do not trouble to stand them on ashes as advocated by some people. All flower buds are removed. To prevent the standards being blown over they are attached to strong wires fixed to stout posts in the ground. By this method a great many roses can be staked with the minimum of effort and expense.

If dry weather sets in the roses must be watered daily, but a convenient method of keeping them moist is to cover the pots with grass cuttings or straw. One trade grower I know mulches with long manure, but I think this is a mistake as, if there is any rainfall during the period they are mulched, a stimulant to the roses will be received just when it is necessary for them to rest and get ready for another season. I should like to emphasize that although under my method of growing pot-roses they are mildly forced, they are allowed to bloom only once, whereas out of doors the roses bloom two or three times during the season. It is I think by this treatment the health and stamina of the pot plant are maintained and the roses go on year after year being strong, healthy and happy in their pot life.

The roses remain out of doors all the summer and early autumn, and receive no attention except watering when necessary. In September we are back again where we started, and the process of cultivation commences afresh. Each pot is examined for drainage, weeds, and worms, and the top inch or so of soil is removed. The rose is then top-dressed with a rich mixture consisting of the potting compost as before described with the addition of bonemeal and well-matured manure. The roses are then returned to their out-of-doors position until it is time to bring them under glass. If there is much rain during this period the pots should be laid on their sides as too much moisture at this period is apt to start the roses into growth if the weather is mild, or to rot the roots.

I may be expected to refer to varieties of roses suitable for growing under glass and this is a difficult matter. It so entirely depends on the kind and class of roses which appeal to the grower. Practically any kind of rose can be grown, from the ever-popular Polyantha to that superb tea rose 'Maréchal Niel.' Speaking generally, I think

it is wiser not to grow the very thin varieties as they open so soon and are so soon finished. I think that no house where roses are grown should be complete without one 'Maréchal Niel,' which should be planted as a standard in the border and trained up the roof. It should be grown and pruned in the manner recommended by that eminent rosarian, the late FOSTER-MELLIAR, and described in detail in his Book of the Rose. It is too long a matter to go into now.

Anyone wishing to start a collection of pot-roses could not possibly go wrong by commencing with the following. They are all good, reliable varieties.

'Mrs. Foley Hobbs'	'Lord Allenby'
'Victor Tschendorf'	'The General'
'Barbara Richards'	'Mabel Morse'
'Mabel Turner'	'Olive Cook'
'Earl Haig'	'Edel'
'Julien Potin'	'Malar-Ros'
'Captain K. Stuart'	'J. G. Glassford'
'Souvenir de Claudius Pernet'	'Swansdown'
'Fontanelle'	'Mrs. Charles Lamplough'
'McGredy's Ivory'	

If I had to select two only, I would choose 'J. G. Glassford' and 'Mrs. Foley Hobbs,' both of which are superb under glass. The latter should be grown on short half-standards to get the best results.

I feel that I have now told you practically all I know about growing roses under glass. I have endeavoured to base my remarks on personal experience, as I think that is what you required of me, without taking into consideration to any great extent the experience and knowledge of other growers. I should, however, like to pay a personal tribute to my rose foreman, Mr. RISLEY, whose knowledge of rose growing in all its branches has contributed so largely to any success I have had.

I commenced this paper by saying that growing roses under glass did not involve a great deal of work and worry. Perhaps after hearing what I have said, you may arrive at a different conclusion, but do not be discouraged. It sounds more difficult than it really is, and when you see the beautiful roses of real quality you can all grow under glass you will think the trouble well worth while.

## KING EDWARD VIII—PATRON.

THE PRESIDENT AND COUNCIL are glad to be able to announce that the following letter has been received from LORD WIGRAM.

PRIVY PURSE OFFICE,  
BUCKINGHAM PALACE, S.W.  
*24th March, 1936.*

Dear Sir,

I am commanded by The King to inform you that His Majesty has been graciously pleased to grant his Patronage to the Royal Horticultural Society.

Yours truly,  
(Signed) WIGRAM.  
Keeper of the Privy Purse.

Ever since the Society was formed in 1804, it has been under the patronage of the heads of the Reigning House. It received the Royal Charter in 1809 and in turn Their Majesties Queen Charlotte, King George IV, King William IV, Queen Victoria, H.R.H. Prince Albert (President 1858-61), Their Majesties King Edward VII, King George V, and now King Edward VIII and Queen Mary have extended to us the favour of their Patronage.

## PLANTS TO WHICH AWARDS HAVE BEEN MADE IN 1936.

**Acacia diffusa** var. **cuspidata**. A.M. February 25, 1936. From Lionel de Rothschild, Esq., Exbury. An ornamental species for the cold greenhouse. The copiously-branched, leafless growths are armed with numerous stiff, sharply-pointed phyllodes, among which the canary-yellow flower-clusters are freely produced. The flowers have a disagreeable odour.

**Anemone Pulsatilla**, Budapest var. A.M. March 24, 1936. From Guy Fenwick, Esq., North Luffenham. The seed from which this striking variety was raised was collected near Budapest some ten years ago. It is a plant of free growth with very large, broad-petalled flowers, rosy-lilac within and lavender suffused with mauve externally.

**Camellia 'Salutation.'** A.M. March 24, 1936. From Lt.-Col. Stephenson R. Clarke, C.B., Haywards Heath. A pretty seedling from the cross *C. saluenensis* × *C. reticulata*. The large blush-pink flowers are single or semi-double, with attractively undulate petals.

**\*Cineraria 'Superb Large Flowered Single Mixed.'** A.M. March 6, 1936. Raised and sent by Messrs. Sutton, Reading. Plants of sturdy, compact habit, 9 to 12 inches tall; flowers single, 3 to 4 inches diameter, symmetrically shaped, many with the tips of the petals recurving, either self-coloured or zoned around the disc with white; colours range in shades of clear blue, pink, deep rose and rosy-purple.

**Cymbidium** × **'Chiron'** var. **'Olive.'** A.M. March 10, 1936. Shown by the Hon. Mrs. H. S. Tufton, Castle Hill, Englefield Green, Surrey. Produced by crossing *C.* × **'Bustard'** with *C.* × **'President Wilson,'** this vigorous plant carried an arching spike of twelve large olive-green flowers, the labellum having a bold crimson-red blotch on the front lobe.

**Cymbidium** × **'Dorchester,'** Castle Hill var. A.M. March 10, 1936. Shown by the Hon. Mrs. H. S. Tufton. This charming hybrid, produced by crossing *C.* × *Alexanderi* with *C.* × **'Tityus,'** bore a spike of fourteen blush-white flowers, the labellum marked with crimson spots and the column coloured rose.

**Cymbidium** × **'Janet.'** A.M. March 10, 1936. From Baron Bruno Schröder, The Dell Park, Englefield Green, Surrey. This promising hybrid carried an erect spike of five well-formed white flowers, with a rose column. The parents are *C.* × *Alexanderi* and *C.* × **'Dorothy.'**

**Cymbidium** × **'Susette'** var. **'Rosy Morn.'** A.M. March 10, 1936. From Messrs. McBean, Cooksbridge. The spike bore twelve flowers of a pleasing rose colour, with venation of a deeper tint, the labellum somewhat lighter and spotted with crimson-red. The parents are *C. insigne* and *C.* × **'Magali Sander.'**

\* Award after trial at Wisley.

**Iris reticulata 'Royal Blue.'** A.M. March 10, 1936. From Miss A. L. Hutley, Maldon, Essex. A seedling, raised by the exhibitor, with very fine, large flowers of deep violet-blue.

**Ornithogalum aureum.** A.M. March 24, 1936. From Lt.-Col. C. H. Grey, D.S.O., Cranbrook. A handsome Cape bulbous plant introduced in the eighteenth century. The many coloured figures available, of which one of the earliest is t. 190 of the Botanical Magazine, suggest variation in the length and breadth of the foliage and in the colour of the flowers. The specimen exhibited had somewhat lax, narrow leaves and racemed orange flowers on scapes a foot high.

**Primula Allionii var. superba.** A.M. March 10, 1936. From Mr. F. Barker, Stevenage. *Primula Allionii* forms small rosettes of soft green, glandular leaves an inch long. The very shortly-stalked flowers are relatively large, and may be white or some shade of rose. In the present variety they are over an inch across and have broad, overlapping, purplish-rose petals surrounding a white eye. A most desirable plant for the alpine house.

**Primula scapigera.** A.M. March 24, 1936. From Mr. W. Wells, jun., Merstham. A very beautiful species of the Petiolares section from the Western Himalaya. At flowering time the sharply dentate leaves, which subsequently enlarge, are 3 to 4 inches long and form a flat rosette almost hidden by the short-stalked flowers. The corolla is almost  $1\frac{1}{2}$  inch across, and has a white centre blotched with greenish-buff and roundish, fimbriate, rosy-mauve lobes. *P. scapigera* can be propagated by leaf-cuttings. It has been grown successfully in the open at Edinburgh, but is likely to require greenhouse protection in many districts.

**Rhododendron Delavayi.** F.C.C. March 24, 1936, as a hardy flowering plant, from Captain A. M. Talbot Fletcher, Margam Castle, Port Talbot, S. Wales. Leaves thick, rather leathery, somewhat variable in size, up to 8 inches long by 2 inches wide, oblong to oblanceolate, apex obtuse, upper surface dark green and glossy, lower covered with light cinnamon tomentum. Inflorescence a compact globose or very slightly flattened truss, about 5 inches long by  $5\frac{1}{2}$  inches diameter. Flowers large, about 25 in a truss, tubular with spreading lobes, 2 inches long by  $1\frac{1}{2}$  to 2 inches wide, corolla deep red.

**Rhododendron × 'Duke of Cornwall' var. 'Trelawny.'** A.M. March 24, 1936, as a hardy flowering plant, from Messrs. Gill, Falmouth. A fine plant with large glabrous leaves up to 6 inches long by 2 inches wide, slightly oblanceolate, subobtuse at the apex, dull green above and light green below. Inflorescence a compact slightly pyramidal truss, 5 to 6 inches diameter, and slightly more in length. Flowers large, about 20 in a truss, the corolla tubular with spreading lobes, about  $2\frac{1}{2}$  inches long by 2 inches wide, the lobes deep carmine and slightly paler with small darker spots in the throat. The colour of this variety differs from the original *R. × 'Duke of Cornwall,'* which was described as "deep crimson . . . the upper petals marked with minute dark dots."

**Streptocarpus caulescens.** A.M. March 10, 1936. From Lionel de Rothschild, Esq., Exbury. This interesting and uncommon plant belongs to a small group of caulescent species from Eastern Tropical Africa. It is a bushy plant 2 feet high, with deep green, softly hairy, ovate leaves, from the axils of which grow lax panicles of small, tubular, rosy-violet flowers. It is readily propagated by cuttings and continues to flower in the warm greenhouse from October to May.



## THE AWARD OF GARDEN MERIT.—XXXII.\*

By F. J. CHITTENDEN, F.L.S., V.M.H.

## 198. PULMONARIA AZUREA.

*Award of Garden Merit, August 8, 1926.*

There grows in certain copses, on clay soil in Hampshire and Dorset, a very beautiful perennial plant, flowering in March or April before the leaves have reached their full size, called *Pulmonaria angustifolia*. In this plant the funnel-shaped flowers open pink and gradually turn bright blue. The leaves are narrow-lanceolate and uniformly green or marked with pale-green spots. The flower-stem, 8 inches or more high in the wild plant, bearing small, narrow leaves without stalks, arises directly from the base and carries a terminal curved inflorescence with the pendent flowers on rather slender stalks in the axils of leafy bracts. It spreads by short, stout, underground stems which usually terminate in leafy shoots and is thus easy to divide.

In one or another of its forms, this species is spread over a great range in the Alps and like most other plants variation is found in habit and flower, and for the best of these—the beautiful clear blue form with scarcely any pink even in the earliest stages—we have kept the name *P. azurea*. It has indeed had many names of which perhaps in gardens 'Miss Jekyll's var.' is one of the best known, and it was known also as 'Mawson's var.' or as *P. Mawsonii*, the name under which the award was first announced. (The full list of plants beyond the first hundred to which the Award of Garden Merit has been given is to be found in the R.H.S. Gardeners' Diary.) There is in individual plants variation in the form of the flower and the one which has been called 'Miss Jekyll's var.' generally has the style protruding from the mouth of the corolla and the stamens reaching only half the length of its tube, while the one called 'Mawson's var.' has the stamens at the mouth of the corolla tube and the style only half its length. This difference is much like that of thrum-eyed and pin-eyed primroses, and with the short-style go larger flowers, as a rule, and less honey. It is therefore just as well, before obtaining the plant, to see it in the nursery and to pick out the bluest, neatest, form with unspotted leaves. This is the one to which the Award of Garden Merit really belongs.

\* The notes on the first hundred plants to receive the Award of Garden Merit have been collected from our JOURNAL, vols. 47 to 53, and published as a pamphlet, price 1s. For subsequent notes see vol. 54, pp. 218 and 423; 55, pp. 121 and 276; 56, pp. 80 and 245; 57, pp. 65 and 354; 58, pp. 171 and 400; 59, pp. 131, 308, 360, 406, and 449; 60, pp. 89 and 545; and 61, pp. 94 and 138.

There are pink and white flowered forms of *P. angustifolia* and there are several allied species. Most of them will grow in the border but better in woodland soil, and as for the most part they flower early, will thrive in light shade.

#### 199. HYDRANGEA PANICULATA.

*Award of Garden Merit, August 8, 1927.*

Many species of *Hydrangea* have been introduced from China and Japan and from the United States, and of them all the Japanese *Hydrangea paniculata* is perhaps the hardiest. It forms a large bush up to 12 or 15 feet in height when fully grown, bare in winter, and in summer with leaves usually arranged in threes on the shoots. The branches are at first downy, but later smooth, and the stalked, usually oval leaves, tapered to both ends, are 5 or 6 inches long on the strong shoots and half as wide.

In most *Hydrangeas* the flowers are in rounded or flattish clusters, but in this and in *H. quercifolium* the inflorescence which terminates the branches is pyramidal, 6 or 8 inches long on strong shoots and 4 inches or more wide at the base. It flowers in August and September, the outer flowers being sterile, opening white and changing to pink or purplish-pink and about an inch across, the inner fertile, small and yellowish-white. There is a form called *H. paniculata grandiflora*, in which most of the flowers are large and sterile, and this is more showy, especially when the shoots are reduced in number by the removal of the weakest and the shrub pruned back in spring. A more elegant effect is produced, however, when the shrub is allowed to grow naturally, and this also ensures a longer life.

*H. paniculata* is at its best in a good rich loamy soil in a sunny place. In a poor sandy soil it is apt to look starved, and in a very heavy one it does not flourish. An annual mulch in summer with decaying leaves is a valuable aid, as it is to all shrubs with large leaves, but it is no advantage to give this mulch through the winter—rather the contrary.

#### 200. PRIMULA CHUNGENSIS.

*Award of Garden Merit, June 19, 1933.*

*Primula chungensis* is a comparatively new plant, but it has already made a place for itself as one of the good garden plants of this large and beautiful genus, so many of which, though most desirable, are far from easy to establish in cultivation.

It was found by Captain F. KINGDON WARD on Sha-ka-la in the Chung Valley in N.W. Yunnan in flower in May 1913, and soon after seed germinated and the plant found its way into many gardens. It belongs to the same group of *Primulas* as *P. japonica* and *P. pulverulenta*, but has much smaller leaves, at flowering time about 3 or 4 inches long, and like *P. Cockburniana* its fragrant flowers are

almost orange. They are about  $\frac{2}{3}$  inch across and are borne in three or four tiers, each with six or eight on shortly stalked flowers, the whole stem reaching 15 to 18 inches in height. *P. chungensis* thrives at Wisley in sunny places on damp soil in the wild garden, where the roots are in a mixture of leaf mould and sand, and has there sown itself and has also produced some very pleasing hybrids. As with *P. Cockburniana*, it is likely that the orange of the flower will combine with the colours of other species and give a greater range of variety in a race of hardy plants moderately easy to cultivate, such as was unknown among the wild progenitors.

201. NYMPHAEA 'JAMES BRYDON.'

*Award of Garden Merit, July 25, 1932.*

Just as there are few blessings that can be regarded as unmixed, so stretches of water in the garden, large or small, stagnant or flowing, while often most desirable, bring responsibilities (as well as mosquitos). A neglected pool may be an eyesore. One without plants to interrupt its calm surface may add more to the beauty of the garden than one overgrown with vegetation unsuitable to or out of scale with its surroundings. Yet there are many plants which, properly placed, will enhance the beauty of water, and plants which demand water, beautiful enough in themselves to be desired in any garden. Among them for our own climate none surpasses the more hardy water-lilies, provided the water is still, of suitable depth and in a sunny place. Water-lilies are not suited to running or cold water or to shady pools. The choice of variety to plant must depend largely upon the depth of the water. Some water-lilies are small enough to be satisfied with the water in a tub; others need a large expanse with water 4 feet deep; many are intermediate in their requirements, and among these *Nymphaea* 'James Brydon' holds a foremost place.

It does no good in a tub. It needs about 2 feet of water with room to dispose its fairly vigorous growth and yet to leave around it a space clear of leaves at least as large as it occupies. It is thus a plant for a small pond or for the marginal region of a large one. It is hardy and a good and regular flowerer. Its flowers are about 5 inches across, cup-shaped and clear rich rosy crimson with a metallic sheen, uniformly coloured throughout, and as they lie on the surface in such a situation as has been described among the deep green leaves they make a very beautiful picture.

We owe this variety to the United States of America, whence it came several years ago. In our climate May should prove a very good time to plant it.

## GARDEN NOTES.

*Hybrids of Rhododendron Griersonianum*.—These hybrids, especially in the second generation, are showing a remarkable abundance and precocity of bloom. A plant, the progeny of a hybrid of *Rhododendron* 'Yellow Penjerrick' and *R. Griersonianum*, which was crossed again with *Griersonianum*, grown from seed sown in 1931 has twenty-seven flower buds on it, one shoot bearing as many as four flower buds on the top; another of this batch had eleven flower trusses in 1935 and now has thirty-one growth leads. These are not starved pot plants, but plants grown in an outdoor bed, and some of their companions have almost as many flower buds as the ones referred to. I noticed another plant, whose parentage is *R. Griersonianum*  $\times$  *R. Griffithianum*, also grown from seed sown in 1931, which made in 1935 from its leader eight shoots; each shoot grew twice in the year, making a growth of about 8 inches the first time, and 2 inches the second time, and at the end of each one of the eight there is now a flower bud.

A *Vanessa*  $\times$  *Griersonianum* sown in 1931 had fourteen flower trusses in 1935, while another of the batch has twenty-three flower trusses this year. A *Griersonianum* cross sown in 1932 has six flower buds on the shoots from last year's side-shoots, and another of the same batch has also eight flower buds. When one recollects that one used to have to wait ten, twelve, or fifteen years for the first flower on a hybrid, especially when *R. Griffithianum* was a parent, one cannot but be grateful to GEORGE FORREST, the discoverer of *R. Griersonianum*.—Lord Aberconway, Bodnant.

*Magnolia Campbellii*.—On March 24 Captain W. D. COODE, who had already shown at the Penzance Show on March 12 a large branch in perfect condition from his tree at Killiow, Truro, Cornwall, exhibited a magnificent group of cut branches of *Magnolia Campbellii* at Vincent Square. Captain COODE tells us that the tree from which these branches were cut was planted by his uncle, the late T. C. DAUBUZ, in 1900 in an old rookery where the soil was rich in excellent leaf mould. The stock on which it was grafted has unfortunately not kept pace with the growth of the tree and this has necessitated the use of props of various kinds, recourse having been had at last to galvanized pipe set in a base of concrete with an iron saddle against which the trunk rests. Gales are still, however, a menace to the tree which is now 40 feet in height. The tree must be over forty years old and it first flowered in 1915, fifteen years after planting, and as it flowers so early in the

year the flowers are often spoilt by frost. This year it escaped damage and has been a most magnificent sight—a mass of enormous brilliant pink flowers all over the tree, before, of course, any leaves had developed. It is in its native home in the Himalaya somewhat variable in colour, occasionally white, sometimes red, but usually more or less pink. It is a tree essentially for the milder parts of the British Isles and there deserving of wide planting and we are grateful to Captain COODE for making it possible for so many of us to see something of its magnificence.

## BOOK REVIEWS.

"Gentians." By D. Wilkie. 8vo. xiii + 187 pp. (Country Life, London, 1936.) 12s. 6d.

It is probably safe to say that up to the present no book has been published in the English language dealing solely with Gentians. The one monograph which deals with the whole genus, Grisebach's *The Genus and Species Gentianacearum*, was published in 1839 with a revision in 1845, and is in Latin and German. A much later book on the genus by Kusnezow (Subgenus *Eugentiana* Generis *Gentiana*) (1896 to 1904) deals only with subgenus *Eugentiana* and is also partly in Latin and partly in German (or Russian).

Since these monographs were written there have been many expeditions to China, Tibet, the Himalaya and Peru, which have resulted in a large number of species of Gentians being introduced into cultivation, some of which were known but also many others which were not known to Kusnezow. All these species have been botanically described, but the descriptions are scattered in various volumes and publications, some of which are not easily accessible. Even when they are found they may be in Latin or in a foreign language not readily understood. Further, the use of botanical terms may make the descriptions almost impossible for the layman to understand. Those of us who are not botanists are not much wiser if we read that the corolla of a flower is infundibuliform, or that the calyx is dimidiate-spathaceous membranaceous. Very welcome, therefore, to the gardener will be this book which in plain English, and as far as possible without the use of botanical terms, gives a good working description of each of the perennial species known to be in cultivation in this country and of others which have been grown here in the past but have been lost. A reference is given to the original botanical description of each species, and, where a plate or figure of the plant is known to exist, a note is given of where it may be found. The book also contains a series of excellent reproductions of photographs of living plants and herbarium specimens, over ninety in number, showing the habit and characteristics of the plants described which will add largely to the value of the book in the hands of the gardener. (That of *Gentiana brachyphylla*, by the way, is upside down.) The book is not and does not pretend to be one which should be read at length in an arm-chair in front of the fire, nor is it intended to be a scientific or botanical treatise. It is more in the nature of a handbook or book of reference which describes the form and shape of the flowers and leaves of each species and its habit of growth, and points out how the gardener may determine whether a plant which he is growing in his garden is or is not the true species which it purports to be. Herein lies the value of the book, though at the same time it may prove a disappointment to those who find that they have not got the true species which they imagined they possessed, for there can be no doubt whatever that a vast number of Gentians are now being grown in gardens under names which are incorrect. In fact, many plants are being grown under the name of a species to which they do not bear the slightest resemblance. A few examples may be given of the confusion which is known to exist. Many of the coarse-leaved species have been known to pass as *G. Kurroo*, and may do so still. The true plant is not yet common in gardens. Plants of *G. septemfida* may be seen very generally labelled with the names of any of the following species, i.e. *G. Parryi*, *G. Saponaria*, *G. Freyniana* and *G. lagodechiana*. There may be some excuse for this at the present time, but in future there can be none as Mr. Wilkie gives a clear description of each and points out its distinguishing characteristics.

Another bad example of the general confusion which there is in gardens in the naming of Gentians is that of the plant commonly but wrongly known and grown as *G. Purdomii*. This is a lax and almost prostrate plant and Mr. Wilkie has no hesitation in saying that it is the same as, or a form of, *G. gracilipes*. No gardener is likely to take exception to the conclusion at which he has arrived. But plants of this so-called *G. Purdomii* have been seen labelled in gardens as *G. trichotoma*, which is an upright plant some 18 inches high, and this naming has been accepted and perpetuated in a recent book on Rock Garden Plants.

The want of a book giving a detailed description of the various species has been, no doubt, partly responsible for the confusion which has taken place, but unfortunately there are other reasons which no book is likely to be able to clear up. Plants and seeds of new and uncommon species are, to-day, being purchased by gardeners and nurserymen alike from many countries of the world and are

being grown under the names sent with them. A host of these are wrongly named, says Mr. Wilkie. Further, Gentians are now very commonly raised in gardens from home-saved seed, and, where several different species are being grown near one another, it seems almost impossible to prevent hybridization by bees and other insects, with the result that seedlings raised from seed saved from a true species may turn out to be hybrids. This is by no means an uncommon occurrence, and where seedlings are raised from seed saved from a plant which is incorrectly named the confusion becomes worse.

It is at any rate a long step in the right direction that we now have a clear description of all the perennial species in cultivation which will enable us to distinguish between them, though we may still be in difficulties when hybrids appear.

Cultivation and propagation by seeds, cuttings and division are dealt with admirably, and the advice given is sound in every way, though, as regards cultivation, perhaps not so full as some could wish. But it must be remembered that it is almost impossible to give advice on cultivation which will be useful to growers in all parts of the country as soil, rainfall, and climatic conditions vary so widely. It might, however, have been wise to stress the advisability of propagation by division wherever it is possible, and by cuttings, where plants cannot be divided, so as to preserve the true species as far as possible and to avoid the trouble which so largely exists of seedlings turning out to be hybrids.

It will be news to most of us that there are in round numbers some seven hundred Gentians known to botanists, most of which are not and never have been in cultivation. The names and short particulars of these are given in tabular form in an addendum. A useful list of synonyms is also added which may save the enthusiast many a shilling when he sees what appears to be the name of a new species listed in a catalogue, but which is in fact only an old species under another name. The book can be recommended to all gardeners and will be of real use to all growers of Gentians as a practical handbook or book of reference. It is an honest attempt to unravel the confusion in the naming of Gentians in gardens and it will supply a want which has long been felt.

C. T. MUSGRAVE.

"Raspberries and Kindred Fruits." By Ernest Markham. 8vo. 68 pp. (Macmillan, London, 1936.) 6s. net.

In this small book numerous varieties, some well known, others deservedly less well known, are incompletely described in catalogue form, along with some cultural notes which cover most of the important points the inexperienced amateur requires to know.

"American Ferns: how to know, grow and use them." By E. A. Roberts and J. R. Lawrence. 8vo. ix + 98 pp. (Macmillan, New York, 1935.) 10s. 6d.

This small volume deals with some sixty species growing in America, amongst which it is interesting to note that twenty-two are indigenous to this country and parts of the continent of Europe.

No reference is made to varieties of the species described which are with few exceptions the only forms considered worthy of cultivation in this country.

It is singular that in no other country are Ferns known to vary to the same extent as in Great Britain. *Phyllitis Scolopendrium*, the 'Hart's Tongue,' one of the commonest ferns in this country, is stated to be one of the rarest in America.

The descriptions and illustrations, reproductions of photographs, coupled with the key to identification (Chapter 5), should enable the inexperienced to identify the various species without difficulty.

The authors advocate the raising of plants from spores rather than the removal of specimens from their natural environment. This is to be highly commended, but to raise normal types in this manner when sporelings abound in ferny districts in large numbers savours rather of wasted effort.

The raising of spores in a nutrient solution is not generally practised here, sterilized soil or Agar jelly being the usual media employed. It is a method certainly worth trial. The advice on the treatment of sporelings is excellent.

The Glossary is comprehensive and a complete index is attached. Elaborate directions are given for the cultivation of ferns in Wardian cases, window boxes, on stumps and in the garden.

The tables compiled in Chapters 6, 7 and 8 indicate considerable research. The volume, save for the chapter on raising spores, is not, however, of great interest to fern growers in this country.

W. B. CRANFIELD.

"Beans." By A. H. Hoare. Bulletin 87, Ministry of Agriculture. 8vo. v + 69 pp. (H.M. Stationery Office, London, 1936.) Paper cover, 2s.

This is an excellent account of the various types and many of the varieties of Beans capable of being grown in British gardens. Lima and Soy Beans are included because they are at times capable of growing here, but on the whole they are not to be depended upon for a crop every year and the Soy Beans are scarcely worth a place. Broad Beans, Scarlet Runners, French Beans, in their great variety are all very valuable vegetables and are fully and well dealt with.

"Our Heritage of Garden Flowers." By Hilda M. Coley. 4to. 96 pp. (Lutterworth Press, London, 1936.) 7s. 6d.

A series of well-drawn illustrations of well-known garden plants showing details of their structure as well as their full portraits, forms the reason for this book. Thirty-two plants are illustrated each by a full plate in colour. Many of these are very pleasing, though some have suffered somewhat in the colouring, as seems inevitable with three-colour process plates where green is concerned.

The nature of the details shown may be illustrated by reference to the plate of the hyacinth. The full-size portrait of the flowers and leaves as they grow is of course the main part of the plate and it also shows a group of unopened buds, a section of the flower, the dehiscing stamen, the fruit as a whole and in section, and a growing bulb.

The text which accompanies each plate gives an account of the form and growth of the plant in simple language and the book would make an excellent present for children to interest them in garden plants, their structure and their ways.

"Botany as an Experimental Science in Laboratory and Garden." By L. J. Clarke, D.Sc., F.L.S. 8vo. 138 pp. (University Press, Oxford, 1935.) 6s.

Dr. Clarke was a pioneer in the field of education, and amongst the first teachers to make botany truly a study of living plants in both laboratory and garden. For many years she devoted her energy, mental and physical, to the building up of a strong botanical department at James Allen's Girls' School. This little book forms a personal record of her endeavours.

After dealing with experimental technique, the author describes the growth of the school garden, not scorning to mention here and there many practical details likely to prove of value to those who may desire to imitate. Her undaunted courage evokes the reader's admiration, for she attempted to make sand-dunes, pebble beaches, heaths, and even salt marshes in one restricted area and moreover hampered by financial limitations. The reader may roughly assess the measure of success achieved by glancing at the imposing list of plants that established themselves in the school garden. To all gardeners this section of the book will appeal, for after all every gardener is frequently making another attempt to provide a suitable habitat for an imported plant in his own garden where he, too, may be able to adjust only some of the conditions of the environment.

Here and there vivid glimpses of the audacious spirit of the designer of these "habitat gardens" are flashed to the reader, as when one reads of the transport of the soil from salt marshes and of its reception in an unpromising condition.

Whilst no attempt has been made to provide a laboratory manual for teacher or pupil, this book cannot fail to stimulate all teachers, more especially those who may feel the pressure of adverse circumstances against their work. Here we see the enthusiastic teacher overcoming all difficulties.

Professor Tansley has written a thoughtful critical foreword appraising the late Dr. Clarke's work.

It is a book for every teacher's shelf.

M. A. H. TINCKER.

"Shakespeare's Wild Flowers." By Eleanour Sinclair Rohde. 8vo. 236 pp. (Medici Society, London, 1935.) 8s. 6d.

Miss Rohde has collected with remarkable industry all the references in Shakespeare's works to plants, flowers, vegetables, gardens and bees, together with what has been said about them by Canon Ellacombe, F. G. Savage and others, and has filled in a background with accounts of gardening, herbalism bee-keeping, etc., from Elizabethan writers.

The book is written from "the poetical and historical aspect," and disarms criticism by making little pretension to scholarship or scientific accuracy, and its



readers are more likely to ask for the pruning away of repetitions than to cavil at omissions and minor inaccuracies, unless the popularity of the new Cambridge edition of the plays (which the author does not seem to have consulted) makes the general public more critical.

The book is handsomely embellished with reproductions in colour of five beautiful water-colour drawings from the Victoria and Albert Museum attributed to Jacques le Moyne, and it should make a very acceptable gift book, especially to those to whom the epithets "old-world" and "quaint" are alluring.

F. A. HAMPTON.

"The Small Garden and How to Make the Most of it." By Sir E. Anson. 8vo. 260 pp. (Bell, London, 1936.) 3s. 6d.

The great increase in building which has taken place in recent years around London and the great provincial cities and towns of this country must have added very largely to the number of those who possess a garden. In many cases, no doubt, the available space which can be cultivated is small: a quarter of an acre or less may be the average size near big towns. But farther afield in more rural districts the holding may consist of an acre or two.

It may be taken for granted that in almost every case the owner is only too anxious to lay out a garden round the house and to make the best use of the ground available, be it a large or small plot. But, keen though he may be, he has probably little or no experience and does not know how to set about making a garden or how to cultivate it. Nurserymen's catalogues do not give him the information he wants, and he is only bewildered with the vast numbers of plants which they contain. All beginners will find Sir Edward Anson's "The Small Garden" a really useful book. In plain simple terms, aided by illustrations which are sufficiently descriptive, it deals with the thousand and one points the beginner wants to know at his first start. It tells how to lay out a garden and how to crop the vegetable garden to the best advantage; how to cultivate the soil; how to raise plants from seed; how to make a lawn, a bed, and a herbaceous border and does not even forget paths; how to manure the garden and why it is necessary to do so, and what manures should be used. The useful facts he gives about Fertilizers for the garden are very sound and might well be noted and kept in mind by all gardeners, even those with experience. The book covers a wide field and is perhaps more utilitarian than artistic in its outlook, in that it deals more fully with the growing of vegetables and fruit than with flowers, and it rightly stresses the necessity of trying to grow enough vegetables to keep the household going. Our memories are short, and it is not always easy to remember the many jobs which have to be done in a garden during the year. Some 150 pages are therefore devoted to a calendar of the work which ought to be taken in hand each month. Flowers generally take a secondary place throughout the book, though the rose garden and herbaceous border are by no means overlooked, and the information given in the monthly calendar with regard to the flower garden is good as far as it goes. But, while dry walls are infinitely to be preferred to steep grass banks which cannot be mown or kept tidy without considerable trouble, the building of these walls should not be as shown in the illustration on p. 95—*i.e.* the stones should not be laid perfectly flat, but should always have a slight tip to the back so as to ensure that any rain which falls on the front or outer edge of the stone may trickle back to the roots of the plant. Also it must be a wet position or a wet country in which a flagstone coping is suitable to the top of a dry wall. Generally speaking, where rock plants are planted in a dry wall it is unwise to put anything on the top of it which will prevent rain from getting into the ground.

The book is essentially one for the beginner, and to the multitude of those who find themselves for the first time in possession of sufficient ground to make a garden, and who require information to help them in their initial efforts, it can be thoroughly recommended.

"Intermediate Botany." By L. J. F. Brimble, B.Sc. 8vo. 562 pp. (Macmillan, London, 1936.) 8s. 6d.

This textbook of botany has been written to meet the needs of various students of intermediate standard, from Higher School Certificate to the first University Examination, whilst also catering for the needs of horticultural, agricultural and pharmaceutical students. The author has very wisely not limited himself to any particular syllabus, but has prepared a book endeavouring to present botany as a more coherent study.

The text, generally, is simple and clear, but here and there we have observed paragraphs which might well be rewritten, as that on p. 167, where the author

says that "All the branches of the stem arise near a stem apex"—a rather sweeping statement which requires further explanation. One of the most interesting features of this textbook is the profusion of illustrations, many of which are really excellent, as fig. 102, and which assist in conveying the author's meaning to the reader.

Questions are provided, by means of which the student may test his knowledge: they are selected from previous examination papers.

The book affords excellent value to the student, and we can recommend it to candidates for the National Diploma Preliminary Examination and for the Teachers' Examination.

M. A. H. TINCKER.

"Carnations and All Dianthus." By Montagu C. Allwood, F.L.S. Ed. 2. 8vo. xxiv + 215 pp. (Allwood, Wivelsfield, Sussex, 1935.) 12s. 6d.

This is an up-to-date edition of a book entitled "Carnations" by the same writer, published in 1926. It contains nearly twice the number of pages of that first issue, which goes to show the great development that has taken place in the *Dianthus* family during the last ten years.

The early history of the Carnation and *Dianthus* is dealt with very fully. The writer tells how he has laboured for years to collect data in connexion with the origin of the Perpetual Flowering Carnation, and he still holds that it is a hybrid of *Dianthus chinensis*, and not merely a development of *D. Caryophyllus* (from which the Border Carnation originated). He details the evolution of this wonderful all-seasons flower, up to the perfection it has been brought to-day. The Border Carnation, perpetual Border Carnation, 'Souvenir de la Malmaison,' perpetual 'Malmaison,' *Dianthus Allwoodii*, Pinks, and various hybrids are not forgotten in this chapter on history.

Soils, composts, potting, stopping and general treatment are minutely explained, with many illustrations to help the uninitiated.

The methods of cultivation of the new races of *Dianthus* for the rock garden and of 'Sweet Wivelsfield' will appeal to all lovers of these beautiful flowers, which are now very popular.

The chapter on food and feeding is both instructive and interesting. Diseases and insect pests are detailed, with remedies.

Those who like raising new Carnations will find in Chapter 28 all they require to know on this subject.

A chapter on greenhouses is not out of place, as a Carnation house differs in some respects from the ordinary greenhouse.

The cultivation of the Perpetual Flowering Carnation bloom for market is a chapter well worthy of study by those who are about to start in this interesting occupation. To show how universal is the interest in the Carnation and *Dianthus*, the book finishes with cultural articles from twelve great countries of the world.

This book, with its 156 illustrations, is a record of forty years' work and study by the writer, and should be in the possession of all lovers of the divine flower.

E. R. CARTER.

## NOTES AND ABSTRACTS.

**Ceanothus, some confused.** I. By E. Edmund Kemp (*Gard. Chron.*, vol. xcvi, August 17 and 24, 1935, pp. 127, 145-6, with 5 figs.).—A valuable review of the affinities and distinct characters of the five evergreen hybrids or species, *C. thyrsiflorus*, *C. Lobbianus*, *C. Veitchianus*, *C. dentatus*, and *C. papillosus*.

The excellent figures drawn by Miss Barbara Watts will assist gardeners to recognize at a glance the forms they grow.

II. By B. O. Mulligan (*Gard. Chron.*, October 12, 1935, p. 262).—A note dealing further with the above-named five species with the addition of *C. Russeianus*, and including a very useful key.—E. A. B.

**Pernettya, The genus.** [Revision der Gattung Pernettya.] By Hermann Sleumer (*Notizbl. Bot. Gart. Mus. Berlin-Dahlem*, XII., Nr. 115, pp. 626-655, 1935).—The genus *Pernettya* is revised botanically. The author, having studied the material available in the herbaria of Kew, Berlin, Paris, Buenos Aires and elsewhere, recognizes thirteen species and numerous varieties, distributed over South America, New Zealand and Tasmania. They divide into two sections: (1) *Pseudogaultheria*, comprising only *P. furians*, characterized by narrow pitcher-shaped flowers in racemes as well as by numerous large "Spikularzellen" within its leaves; and (2) *Archipernettya*, including all the others, with solitary short bell-shaped flowers and few or no "Spikularzellen." Within *Archipernettya* three series are distinguished: the *Pumilae* with mostly entire-margined, blunt-tipped, small or very small leaves and consisting of *P. pumila* and *P. leucocarpa*, both South American and low-growing; the *Purpureae* with distinctly and closely toothed, pointed, mostly larger leaves and containing, *inter alia*, *P. tasmanica*, *P. macrostigma* and *P. prostrata*; and the *Mucronatae*, with 3 or 4 spines on both margins and a distinct spine at the tip of the leaf, a South American group including *P. mucronata*. The differences between the species of a series, being mostly drawn from their leaves, are often slight and liable to variation; the flowers give little help. From *Gaultheria* the genus differs essentially only in its fruit being a berry, the sepals in most species remaining small and membranous, whereas in *Gaultheria* they swell up around the capsule. The leaf-anatomy is very uniform; whereas in *Gaultheria* three-layered palisade tissue occurs, in *Pernettya* the palisade tissue is usually one cell thick, with occasionally two layers at the middle, but never three cells thick. Cultivated specimens have less xylem in their leaves than those from wild plants. The name *P. empetrifolia* is replaced by *P. pumila*, and *P. pilosa* (*Bot. Mag.* t. 3177) by *P. ciliata*, on grounds of priority, while *P. Penlandii* becomes *P. prostrata* var. *Penlandii* and *P. purpurea* (*Bot. Mag.*, t. 6204, as *P. Penlandii*) becomes *P. prostrata* var. *purpurea*. Of the cultivated forms of *P. mucronata* (*Bot. Mag.*, tt. 3093, 3889, var. *angustifolia*), variously known as *P. floribunda*, *P. speciosa* and *P. phyllireaeifolia*, few are stated to correspond with the type, most with var. *rupicola*, and in large part may be presumed to be hybrids. The whole paper (except for the Latin description of *P. Howellii*, a prostrate little shrub with pink fruits, from the Galapagos Islands, belonging to series *Mucronatae*) is in German and gives the distribution and synonymy of each species and variety in detail, as well as a key distinguishing them.—W. T. S.

**Pests, Garden: their detection and control.** By G. Fox Wilson (*Gard. Chron.*, continued from vol. xcvi, January 5, pp. 10-13; May 11, p. 309; June 15, pp. 399-400; July 6, pp. 11-13; September 7, pp. 180-1; November 16, pp. 354-7, 1935). In continuation with 17 figs.—These six latest instalments of this useful and well-illustrated series deal with forms of damage caused by insects: roots eaten by Diptera, galled by Weevils or injured by root-infesting Aphides and Mealy Bugs; seeds attacked on the plant or after sowing, and stems injured by Aphides, Eelworm and a Capsid Bug.

The practical measures suggested for the control of these pests and the numerous photographic illustrations of affected plants are excellent and should prove of great service to all gardeners.—E. A. B.

**Sisyrinchium. Some Species in Cultivation.** By G. W. Robinson (*Gard. Chron.*, 1935, vol. xcvi, pp. 100, 103, 196-7, 212, 226).—An admirable account of fifteen species of this interesting genus which includes about two hundred described species.

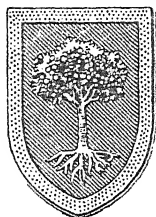
Those dealt with are arranged under two main groups. The first contains those with rushlike leaves and stems like the old favourite *S. grandiflorum*. The second deals with those with flat stems and leaves and is subdivided into species with yellow flowers, those with blue, and those with flowers of more than one colour. Ample descriptions of the distinguishing characters of each species are given with references to figures and dates of introduction. Three plants of closely allied genera are also described, namely *Solenomelus chilensis*, *Symphostemon odoratissimus* and *Calydorea speciosa*, each of which has been included by some authors in the genus *Sisyrinchium*.—E. A. B.

**Spray Materials, Injury from.** By L. M. Massey (*Amer. Rose Ann.*, 1935, pp. 38-52).—Burning results from the use of many of the usual spray fluids and dusts when external conditions are not favourable. High temperatures are especially conducive to this form of injury.—F. J. C.

**Zephyranthes, Duplications of.** By H. H. Hume (*Bull. Torrey Bot. Club*, vol. lxii, no. 7, pp. 403-411; 5 figs.; 1935).—*Zephyranthes Eggersiana* is considered a synonym of *Z. citrina* (*Bot. Mag.*, t. 6605); *Z. Tsouii*, described as a new Chinese species in 1927, a syn. of *Z. carinata* (*Bot. Mag.*, t. 2594), a Mexican plant sometimes cultivated in gardens of the Far East; *Z. Taubertiana* a syn. of *Z. robusta* (*Bot. Mag.*, t. 9126); while *Z. bifolia*, originally described from a drawing by Plumier (reproduced), is distinct from *Z. rosea*, to which it is usually referred. The five species are illustrated.—W. T. S.

# JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

Vol. LXI



Part 6

June 1936

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## CROCUSES.

By E. A. BOWLES, M.A., F.L.S., V.M.H.

[Read February 11, 1936 ; Mr. R. D. TROTTER in the Chair.]

I BEGIN with an apology that this lecture must be illustrated by lantern slides instead of the living specimens I hoped to show you. The exceptionally late season prevented the lifting of plants from ground still frozen as hard as cement, and the frosts have ruined the good looks of all Crocuses bold enough to attempt flowering. Were it not for these beautiful flowers kindly brought by our Chairman from plants protected by overhead lights you would have my word only to reveal the wonderful attraction of the fine strains of *Crocus chrysanthus* seedlings now being raised.

Before we turn to the slides I should like to say something about what some of my friends call "Crocus fever." Some charge me with giving it to them, but I assure you I do not. I give them Crocuses and I leave the fever to develop. It is not a dangerous disease, although if you get it badly it lasts throughout the year. It is not a germ I can carry about to infect you with ; it is simply the charm of the Crocus itself. So be warned, and if you do not want to have Crocus fever, do not look at Crocuses.

Let us consider how many charms the Crocus possesses. To me its chief charm is that it flowers during the dulllest months of the year. For seven months it is easy to have Crocuses in flower out of doors. Even with 2 feet of snow on top of them your Crocuses are still there, and you could dig down to find them, but they will be better if left alone until the snow goes. If you have the right one you could pick a Crocus on the same day that it is legal to eat grouse. However, very

few people grow *C. Scharojani*, the autumn-flowering orange one, because it has not yet settled down in our gardens. Now that we know it prefers a shady place such as you would give to a fern, where the leaves might remain green for the whole year round instead of being dried up by summer sunshine, its flowers should appear in August. You can certainly expect plenty of Crocuses in September, because the first rains of autumn wake up *C. speciosus*, and portions of the garden can be made blue with its flowers in the same way that the bluebell of our woods makes pools of blue in spring (fig. 54). *C. speciosus* from a little distance looks as though it were true blue. It is not quite that, but its pale lilac groundwork is marked with blue veins, so many and conspicuous that the distant effect is that of a blue Crocus.

Another great charm of the Crocus is its range of colouring. We have not a scarlet Crocus yet, but we are getting rather near to it in some of the vivid orange ones. Some seedlings of *C. Tomasinianus* we have that also might be called red. The blossoms brought here by Mr. TROTTER, ranging from white to yellow with various markings on the outside, are all seedlings of the wild yellow *C. chrysanthus*. Besides these white and yellow forms *chrysanthus* provides blue seedlings which flower a little later. When I say blue I mean what the catalogues and most people talk about as blue, but which should be described as lavender or lilac. There is such a marvellous range of colouring in Crocuses that everybody, unless he seeks for vermilion or magenta, can find his favourite colour in one or other of them.

Then another of their virtues is that they please the nose. Most of them have a suggestive scent of spring, consisting of a great deal of primrose with a slight touch of honey. Many will give a delicious whiff of this true spring scent right through the winter.

Yet again they are so hardy. A few that come from southern homes, such as Palestine and Persia, need a little looking after. There is one that insists on flowering about Christmas, and comes from near Bethlehem. It is interesting to think that if the so-called Meadow of the Shepherds really was the place where the shepherds watched their flocks by night, it is likely that they did so sitting upon a bed of beautiful *C. hyemalis*. It still grows there and flowers just about Christmas, but it is not fair to ask a Crocus from Bethlehem to flower at Christmas in the open air in England without protection.

Lastly, when we plan planting bulbs we like to have a good lot for our money. That is another advantage of Crocuses—they are inexpensive, they have not gone the way of choice Daffodils. When people catch Daffodil fever they have to buy their plants on the gold standard, but most of the Crocuses can be bought on a copper standard.

Surely, then, Crocuses themselves possess sufficient charms to induce anybody to start growing them.

An interesting point about the colouring of Crocuses is that although yellow is such a prevalent colour among spring-flowering kinds it is the rarest in the autumn. *C. Scharojani* is the only yellow species

that has been introduced to cultivation. One other I have had. Long ago two bulbs were sent to me from different sources, and unfortunately I lost them both. Their flowers were a pale citron-yellow unlike any shade I have seen in a *Crocus*. They were a beautiful variety of *C. vallicola*, one of the autumnal species that is difficult to maintain in England.

There is *C. vitellinus*, which comes from Northern Syria and sometimes gives a flower before Christmas, but too late to be called autumnal. It is not easy to accommodate out of doors unless you have some remarkably warm spot in the garden. If you have a place where the last November bluebottle sits on a wall or rock, or where the cat lies to enjoy the sunshine on a cold day, that is the place to plant such a *Crocus* as that. Of course you must displace the cat. I find the clippings from *Aegle Sepiaria*, a hardy orange with twigs of living barbed wire, very useful to stick in the ground in the cat's corner; failing these blackthorns may be sought in somebody's hedge nearby. Of course I am sorry for poor pussy, but I like *Crocuses* better.

Many yellow *Crocuses* flower in spring, and a very few of them never show brown markings on the outside. Many were at one time known only in their yellow forms. Now I can think of only three that show no tendency to brown markings. One is *C. gargaricus*, the only spring form that pushes up the flower without leaves—and how well this bright orange spot looks on the brown soil! The others are *C. Olivieri* and *C. Suterianus*, the Greek and the Asia Minor forms of one species. A plant of *C. ancyrensis* showed a slight tendency to bronze on the outside, and seeds from that produced forms of a deeper yellow, with a bronze band on the outside. I was greatly pleased when I found a yellow *chrysanthus* with dark stripes. I raised seedlings from that, some of which showed wider stripes. Later seedlings have such dark brown bands on the outside that when the flowers are half open they produce a beautiful contrast with the yellow within.

When we see such great variation in the markings on the outside of the flowers we wonder what can be the meaning and use. With the exception of *C. Alexandri* (fig. 61), white within and purple outside, and *C. Balansae*, *C. Korolkowii* and *C. chrysanthus* var. *fuscotinctus*, with yellow ground colour and brown outside, these broad bands of colour are seldom found among wild forms.

It seems to me that the bands are not so useful to a wild plant as stripes and feathering, and therefore banded forms have not seeded and multiplied so freely as those with featherings. To raise *Crocuses* with deeply coloured exterior we must work up from those with feathered markings until after some generations they coalesce and colour the whole back of the petal. Striped and feathered markings are very frequent in wild *Crocuses*. I have often noticed that when they appear through the ground in bare soil it is not easy to see a striped bud from a little distance. Although I have never had an opportunity of seeing striped wild *Crocuses* flowering among thin winter grass,

I have little doubt that they resemble the colour of the ground there with the shadows of the grass thrown on it, and are therefore inconspicuous to a bird. If wild birds in other countries are as evil as our wicked sparrow in England they also may peck a Crocus to pieces for the sake of a minute drop of honey. There may be another explanation of the striping on the outside of the Crocus. The purple pigment contains anthocyanin. I am no chemist, but I believe it is an established fact that where anthocyanin is present in cells they are more susceptible to the effects of light, warmth, or dryness. The red colouring on the outside of a Daisy is an example of this. Chaucer called it the Day's Eye, because it is opened by the earliest gleam of sunshine.

Now what the Crocus wants to do is to remain hidden until the right moment when the sun comes on it and the day is warm enough and dry enough for it to open, and if it can do this quickly bees may visit it before a bird has found it and it can be fertilized before its petals are destroyed. How is this rapid opening brought about? If you write letters by the fireside—a pleasant thing to do on winter evenings—you may find your postage stamps rolled up with the gummed side inward. That side has shrunk as the warmth dried the moisture out of the gum. Stamps are difficult to stick on in that condition as they crack, but I have found that if you breathe gently on the gummed side they will open out quite flat again. I think that is what happens with the almost magical opening of a Crocus; when the anthocyanin is agitated by warmth, or light, cells part with their sap either by evaporation outwards or by passing it on to the cells of the inner surface.

Anyway they shrink like the gummed back of the stamp—and the Crocus petal is curled outwards. If you bring Crocuses into a warm room they respond to it directly, and you will find that the outer cells lose their turgidity and their stiffness. If you wish them to remain open do not put them into water. If you place them in water they will soon take up enough to make their cells turgid again, and the flower will close, as it does when the air becomes cold or damp.

It is interesting to notice that a Crocus, although often called a bulbous plant, stores up starch in a corm instead of a bulb. A corm is a solid body of the nature of an underground stem, with buds growing out from its top or sides and roots from its underside. In a bulb the stem is reduced to a thin plate from which roots grow, and the food material is stored in scales which are formed out of transformed leaf-bases. The leaf-bases of a Crocus hold no stores: their fibres alone remain and form the covering, called a corm tunic, which protects the corm.

The differences in these tunics are so great that it is possible to sort Crocuses by the patterns of the jackets they wear. *C. laevigatus* has a jacket all in one piece, which splits at the bottom into vandykes so that the roots may grow out. There is only one Crocus like that, and I find it a useful species to plant in alternate rows in the beds to



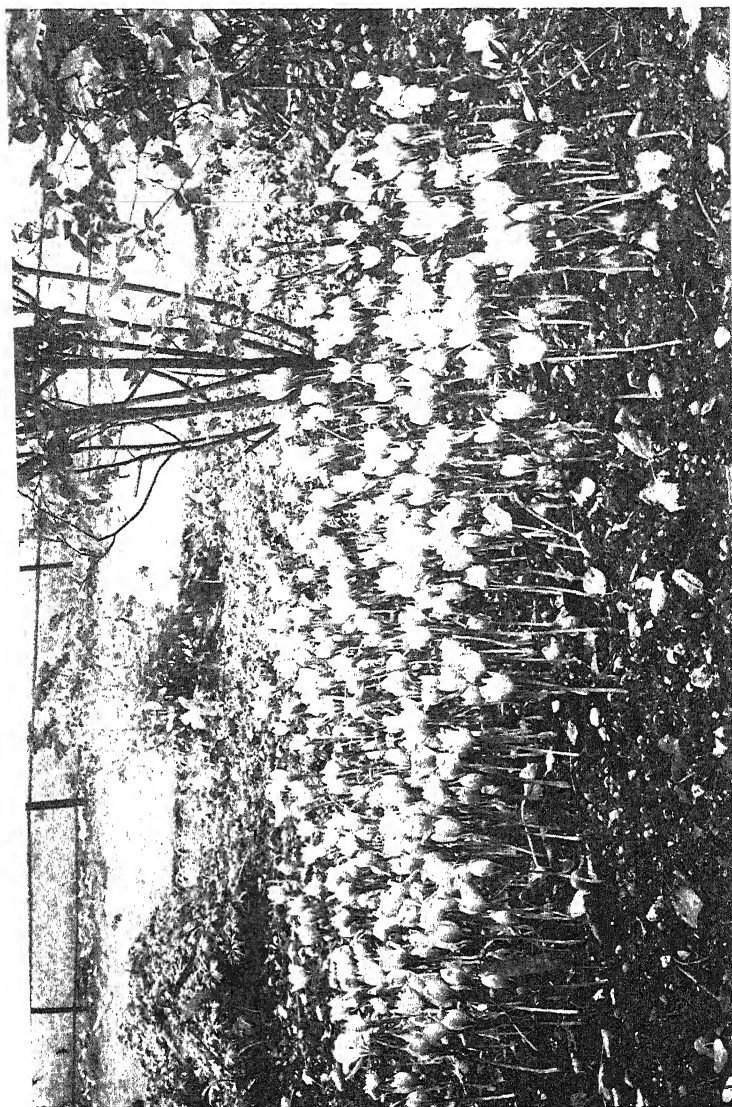


FIG. 54.—CROCUS SPECIOSUS AT MYDDELTON HOUSE.

[To face p. 240.]

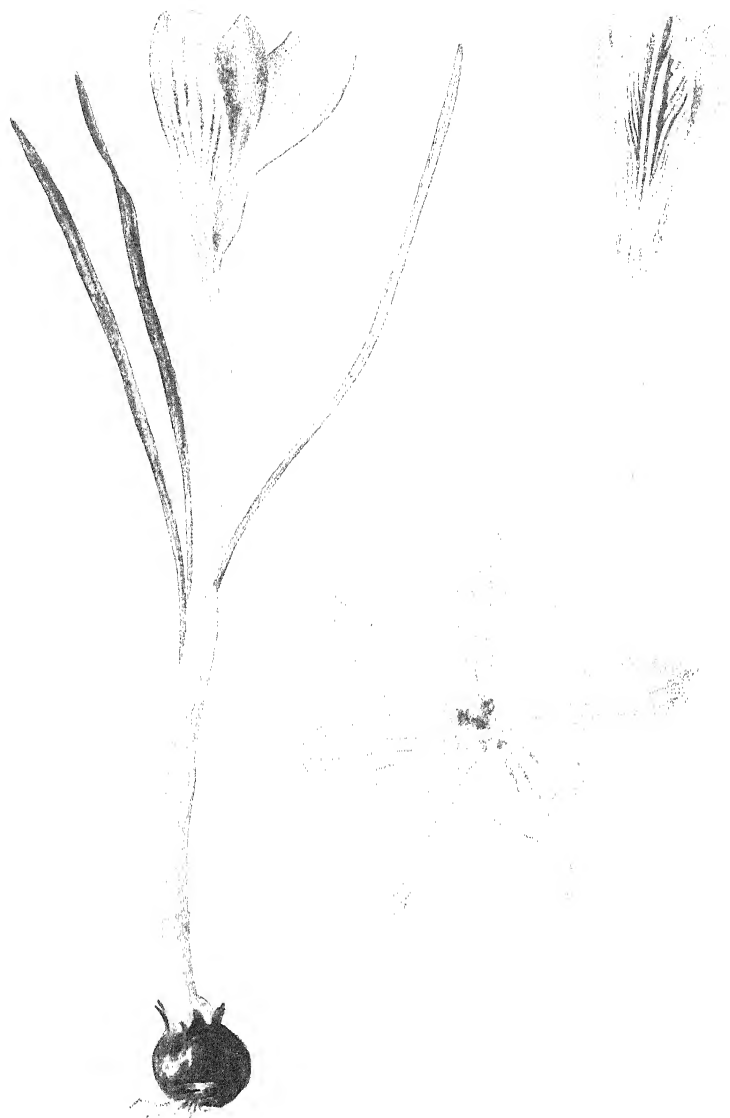


FIG. 55.—*CROCUS BIFLORUS* ADAMI.  
(p. 242)

divide kinds whose jackets are so much alike that if mixed it would be difficult to distinguish them. The small boys in the village who help me to dig up my Crocuses know it well and they call it "the nutshell." When we find a row of nutshells we know the next row belongs to a fresh label.

There are some that have skins as beautifully netted as a tennis net. The fibres are interwoven in some, in others they join together laterally at intervals, and the swelling of the corm inside stretches the interstices apart into a little network.

Others have rings round the base between which the roots push out. Most of those with netted tunics have a star-shaped plate at the base, the stiff bristles of which connect with the upper tunic but allow for the passage of roots. I think mice attack Crocuses with netted tunics less often than they do those which have thin membranous skins. It must be very uncomfortable for a mouse to get pieces of a stiff net stuck between its teeth, so it learns to leave alone those that are so protected.

Having told you about these botanical peculiarities, I will describe some of the Crocuses we have in gardens.

First, the Dutch yellow, the best known of all Crocuses, which has never been found wild and seems perfectly sterile, never having been known to set seed. It must be one of the most widely grown plants in the world that have come from one original root—what we nowadays call a clon. A few variations with paler or more striped flowers are known as "inferior stocks" among nurserymen. These must have appeared so long ago that we cannot trace their history, and as they too are sterile they have all been grown on continuously by vegetative reproduction.

This Crocus is often planted in grass mixed with *C. vernus*. I think it is a mistake to do this, because the yellow does not go very well with the lilac shades. When I began gardening, we cut down a lot of trimmed laurels which looked like a magnified dish of Spinach in the middle of a lawn. We bought 500 mixed varieties of Crocuses to plant before the turf was laid. I still regret having mixed yellow Crocuses among the white and mauve. If you keep the yellow to themselves, or only give them white ones as companions and plant the mauve and purple together in another part, I can assure you the effect will be much better.

*C. aureus* is the beautiful wild parent of the Dutch yellow. This orange form comes from Istanbul and seldom shows brown markings. I have seen such markings and had hopes that I might raise an orange Crocus with a dark brown outside from them. The darker seedlings, however, seem less easy to grow. The dark brown corm tunic of parallel fibres reaches up to the sheathing leaves and is called the cap—such developments are not for ornament only nor to help botanists to sort out the plants. They have some use. I found *C. aureus* growing in very stiff clay in Greece. The corms were deep down and always had that long cap reaching up to the surface. Seedlings

had been pulled down by means of contractile roots until they were six or more inches below the surface. The hole made in the clay by the passing through of the corm serves as a kind of chimney and is kept open year by year by the slowly decaying fibres of these caps. I have found fifteen layers of jackets on some of them, as well as the remains of the seedling's baby clothes left up in the chimney. So those that go deep into clay soil, like *aureus*, need this stiff cap to keep the chimney open, that the shoots may come up through it every year into the light.

*C. aureus lacteus* is a very rare white form. *C. aureus* at one time seeded freely and produced many varieties. Some are only known from figures in old books, and this white form has almost died out in English gardens. It is not quite white but has a slight tinge of cream in the flower, which shows it is the white form of an orange Crocus.

The most robust form of *C. biflorus* bears the misleading name of Scotch Crocus. It may have gone out to the world from some Scotch garden, but it is not a native of Britain. This again, like the Dutch Crocus, is not known to seed. It has become perfectly sterile in gardens and reproduces itself freely from off-sets.

The wild form from Northern Italy is smaller and has fewer stripes. Its variety *estriatus* has no stripes, therefore the yellow external colouring shows up more. A pure white form is found among the others, and, as so often happens with an albino, is more slender in shape.

A form which comes from farther east is known as *Adami*. There is more lilac in the coloration and much striping and feathering. It is very variable, and one is the bluest in colour of all the Crocuses I know. It has a curious history. Dean HERBERT had three bulbs sent him which he named *C. Adami* and described one form as the bluest Crocus he had ever seen. It seems to have utterly disappeared. Some years afterwards Mr. BARR very kindly sent me three bulbs of some Crocuses sent him from the East, asking me to grow them and tell him what they were. One of them was the lost blue form, and that seems to be the only other time it has come to England. I am thankful to say I have managed to keep it this time and all who see it call it the blue Crocus (fig. 55).

Another form comes from Dalmatia, white inside with a beautiful purple suffusion outside. It is known as *C. biflorus Alexandri*.

A seedling that appeared spontaneously in my garden I look upon as a further development with the ground colour lilac instead of white. It is one of the best Crocuses which the kind fairy of the garden has given me.

Now we come to the parent form of *C. chrysanthus* from which all the wonderful varieties lying on the table have come. Notice one very peculiar thing about it : the anthers have black spots on the little barbs at their bases. They are not always to be found in wild specimens of this Crocus, but are very characteristic and generally appear in seedling forms. In suspected hybrids between *biflorus* and *chrysanthus*

one of the things I look for first is the black barb, because if it is there the seedling is almost certain to have *chrysanthus* blood in it.

Here is the first seedling *chrysanthus* I raised with stripes on the outside. I called it 'Yellowhammer' (fig. 56), as I try to name my *chrysanthus* seedlings after some bird which they resemble.

Another I called 'Bullfinch' because it is so round and chubby. It was raised from a wild form with a little feathering on it. It is white within, but the yellow from outside shows through in the three outer segments. The featherings in this have almost coalesced to form a band of colour.

*C. chrysanthus pallidus* collected on the Bithynian Olympus is larger, paler and more vigorous than the ordinary form found in various places in Greece and Asia Minor. Mr. JOHN HOOG raised some beautiful seedlings from this *pallidus*. One of them is known as the Warley variety, because he gave it to Miss WILLMOTT to grow at Warley. It is like a larger and more deeply coloured 'Bullfinch.'

He very kindly sent me some others, all brothers and sisters of that variety raised from *pallidus*. One of the most beautiful exactly matched the butter that I was eating at my breakfast when they came. Mr. HOOG very kindly named that one after me, and it is the Crocus you see so many of to-day on the stands in the hall. A paler form we called 'Moonlight.'

Mr. HOOG very generously sent me a root of each of his *pallidus* seedlings. These I treasured and was glad to see them gradually increasing. Then I had a sad letter telling me that the mice had got into the frame where he grew these special Crocuses and had eaten every one of them. I was thankful he had sent some to me, because by that time I had enough of each to share them with him, and now he has good stocks of them again.

*C. aerius* is a charming Crocus nearly allied to *chrysanthus* with which it hybridizes very freely. It has a membraneous tunic, much thinner than that of *chrysanthus*, which helps to separate the one from the other.

A very fine seedling appeared at Daisy Hill Nursery and is called *C. aerius major* (fig. 57). I found it one of the most difficult flowers to paint because it has so many colours in it, a mixture of gold, blue, purple and orange. It seeded very freely, but like so many of these things that seed freely, it died out in my garden and I do not know if it still exists anywhere.

A curious yellow form which appeared among *aerius* seedlings has brown barbs at the base of the anther, and I suspect it is a hybrid between *chrysanthus* and *aerius*.

*C. Sieberi* var. *atticus* is rather deeper in colour than the usual form. In an ordinary season it would be making sheets of colour in the garden long before this. We cannot foretell what will be in flower by a certain date, because the Clerk of the Weather so often says, "Oh, no, you don't"! He has said it very plainly this year, and I could not bring you any living specimens. I have some good seedling forms. One is

pure white with an orange throat. I saved seeds from the paler ones for many years hoping to get a white one, and then one day it appeared in the rock garden where I had not sown any seed. That is just Nature's way of telling you, "I can do these things better than you if I choose, though you imagine you know all about the *scientific part*."

Another form of *Sieberi* has a white band above the yellow throat. It has been collected lately on Mt. Chelmos. A friend aptly remarked that it looked like an egg in an egg-cup, and now I call it the 'egg-cup' Crocus.

There is a remarkable form of *Sieberi* found in Crete. *C. Sieberi* on the mountains of Greece is lilac, but on the mountains of Crete it has a white groundwork and the outside marked with purple in such endless variety that it is hard to find two alike (fig. 58).

A lilac and purple form raised by crossing the last one on to the ordinary *Sieberi* is very hardy and early-flowering, and it is called after its raiser, 'Hubert Edelsten.'

*C. veluchensis* is a slender Crocus with a small corm, and I distrust Crocuses with very small corms. They generally spend their strength in making seed instead of corms. It is a pretty Crocus found in Greece and Turkey.

*C. dalmaticus* is very nearly allied to *C. Sieberi*, with a longer flower but a similarly netted corm tunic. You can distinguish them by their tunics, for *Sieberi* has a separate basal tunic for the roots to go through, and in *dalmaticus* the netted covering goes right down to the base and the basal tunic is absent.

*C. carpetanus* is found in Spain and varies from white to lilac. Other Crocuses have a pronounced square keel on the underside of the leaf, but *carpetanus* can be recognized at a glance because the back of the leaf is semi-cylindrical.

*C. Fleischeri* is an Eastern Crocus with very thread-like leaves and narrow perianth segments. The stigmata are scarlet, and the white flower is transparent enough for the colour to show through, with much the same effect as that of a wood-pecker's egg before it has been blown and the yolk shows through the white egg-shell.

*C. Korolkowi* (fig. 59) has more leaves to the tuft than other Crocuses have, sometimes as many as twelve. It has a curiously coarse tunic and makes the largest corms of any Crocus, but unfortunately it is not very hardy in England. A good form of it has the colour on the outside forming a broad band.

Now we come to some autumnal species. *C. Scharojani*, which throws up wonderful orange flowers in the middle of August, I have already spoken of.

*C. caspius* has been introduced lately from the shores of the Caspian Sea. When it first came it flowered at odd times right through the winter, but now that it has settled down it will flower late in October. It is a very charming white Crocus, and there is a lilac form of it.

*C. laevigatus*, the nutshell Crocus, is a very easy one to grow. It has increased enormously since I found it forty years ago in Greece. I



FIG. 56.—*CROCUS CHRYSANTHUS* 'YELLOWHAMMER.'  
(p. 243)

[To face p. 244.

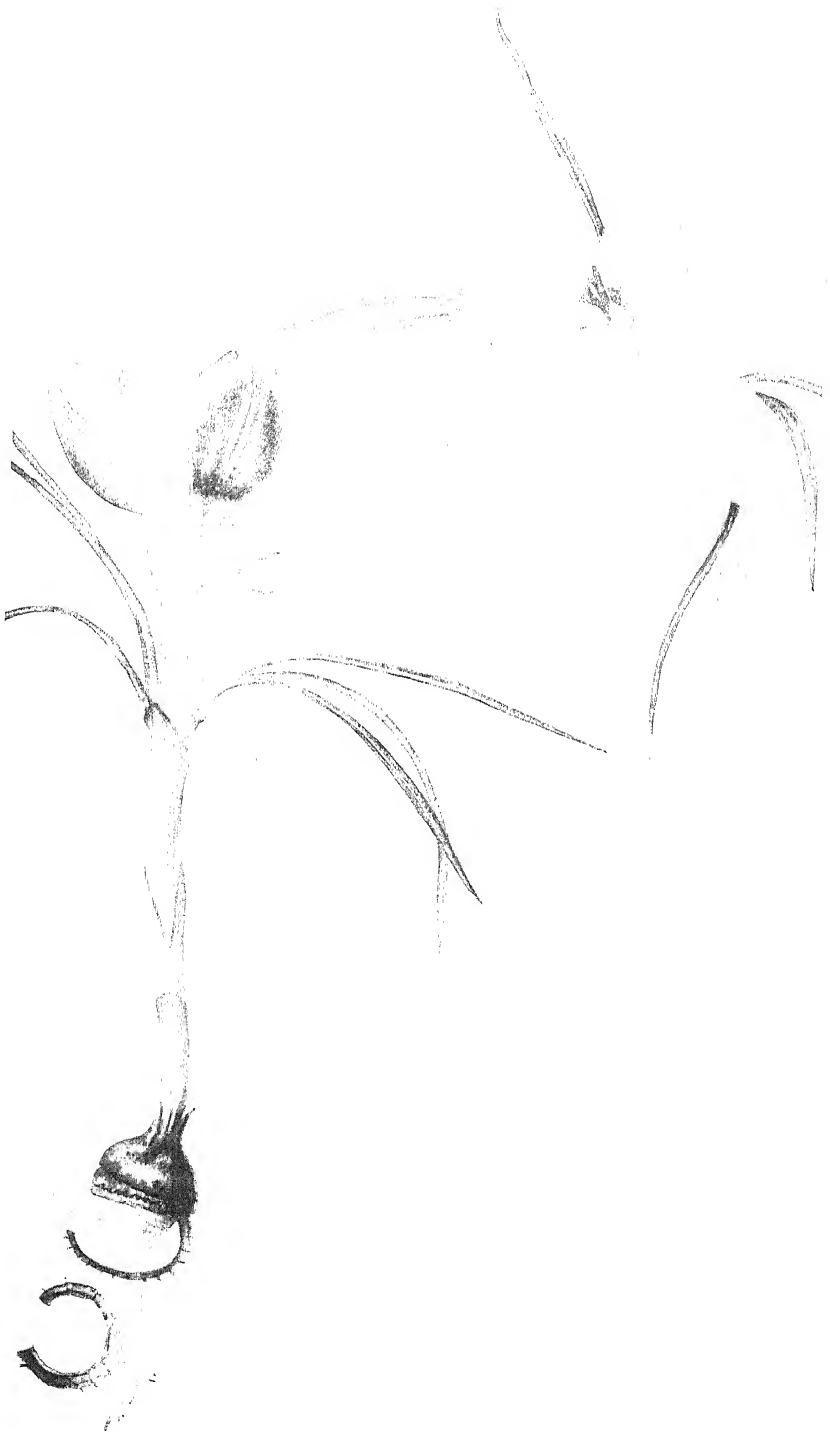


FIG. 57.—*CROCUS AERIUS MAJOR*.  
(p. 243)





FIG. 58.—*CROCUS SIEBERI* VAR. *VERSICOLOR*.  
(p. 244)



FIG. 59.—*CROCUS KOROLKOWI* VAR. *DYTISCUS*.  
(p. 244)

[To face p. 245]

collected many varieties and have raised seedlings ever since, and now have some charming colours. Some forms come into flower in October and others flower until February brings the spring-flowering species.

*C. albanus* is a curious Crocus with the narrowest segments of any.

*C. speciosus* is the best of those that flower in the autumn. Fig. 54 is from a photograph taken last year by Mrs. MALBY in my garden. I planted a dozen in that bed and you see how they have increased. Nothing that I could do would get rid of them for, as with celandine, the more you dig the more the little offsets are spread about.

Fig. 60 shows my Crocus beds and frame taken one spring day and what they ought to be like now.

## PERPETUAL-FLOWERING CARNATIONS FOR THE AMATEUR.

By E. R. CARTER, F.R.H.S.

[Read April 21, 1936 ; J. M. BRIDGEFORD, Esq., in the Chair.]

THE perpetual-flowering Carnation is considered by many people to be a plant that requires coddling. It is in fact quite hardy and will, with careful attention and the aid of a greenhouse, grow and bloom throughout the four seasons of the year.

I propose to speak from the standpoint of the beginner and shall try to describe all the details of the treatment of the plant from its propagation onwards.

As a greenhouse is a necessity for successful cultivation of this Carnation all the year round, I will deal with it first. It should be of the span roof type, and it should be erected in the most open position possible—*i.e.* not overshadowed by trees or buildings. The ends should face east and west that it may command the maximum amount of light. The eaves should be at least 4 feet above the staging to allow head-room for the plants, which grow rather tall, especially during their second year. The staging may be of wood battens or iron frame covered with corrugated iron sheets on which is spread shingle or ashes to hold moisture during hot dry weather. One of the chief features should be the number of ventilators. They should be on both sides of the ridge, on both sides of the house and at the ends. Box ventilators should be placed under the staging, so that air may be admitted from any direction. Some kind of heating apparatus is necessary for the winter months, not for creating high temperatures, but chiefly to disperse moisture and keep the air buoyant. One or two degrees either side of 45° F. for night and 55° F. during the day are the temperatures to be aimed at. The usual method of heating is by boiler and hot-water pipes, and it should be borne in mind that a long length of small gauge pipe distributes the heat better than a short length of a larger gauge.

### PROPAGATION.

There are three methods of propagation : by cuttings, by layering and by seeds. The method usually adopted is by cuttings, so I will deal fully with this method. For beginners I would suggest that they purchase plants in bud or bloom from a reliable source in early autumn. Cut the flowers from these as soon as they open and take note of or mark the stems which produced the most perfect blooms. It is from these stems that you should select your cuttings later on.

Cuttings can be rooted at any time, but December, January and February are generally considered the best months; the plants then have spring in front of them, which means so much to plant life.

By December the marked stems should have produced side shoots large enough for rooting—*i.e.* 3 to 4 inches in length. The proper ones to take are the short jointed ones usually found half-way down the stem. These are taken from the plant with a downward pull by holding the stem with the left hand and the base of shoot, together with the leaf attached, with the thumb and forefinger of the right hand, and pulling it completely away. It should then come away with a small portion of the old stem attached to its base. The slightly ragged ends should be trimmed off with a sharp knife. You then have what is called a "heel" cutting. Should the shoot come away without a heel, *i.e.* without a part of the old stem, cut it back with a sharp knife to just under a joint and peel off the leaves cleanly; this is called a "piping" cutting.

The best medium for rooting cuttings in winter is clean sharp sand. Put about 4 inches of sand into a seed pan and water thoroughly; insert your cuttings to the depth of half an inch, first making a small hole with a stick or anything suitable; place your cuttings 1 inch apart; then water with a fine spray to settle the sand firmly round the stems.

If you have only a few cuttings of several varieties place them round the sides of the pan, taking note of the order of insertion. Make a note of the date also. Never allow the cutting to wilt before or after putting it in the sand. The pans are now ready for the propagating frame, which may be one constructed especially for the purpose, like a miniature greenhouse, or a box 8 to 10 inches deep covered by a sheet of glass. Whichever is used must have about 1 inch of sand or cinder ashes placed on the bottom to hold moisture, and it should be stood upon the staging directly over the hot-water pipes. A bottom heat of about 50° F. should be maintained. At this temperature cuttings will root in about four weeks. Never let the sun's rays strike the cuttings, therefore shade slightly when the sun is strong. Keep the base of the cutting moist; never let the sand dry out. Turn the glass daily to avoid drip. Never use the same sand for a second batch of cuttings, as it will probably turn sour and your cuttings will rot. One can generally tell when roots have formed by the outer leaves flattening out and the centre starting to grow; the glass is then removed for a few days to harden the cuttings; they will then be ready for potting up.

#### FIRST POTTING.

For cuttings rooted in December or January use 1½- or 2½-inch pots, as the root growth is slow at this time of the year. From February onwards a larger size may be used; but I consider that a small pot with more frequent moves into larger pots is better, as

there is less chance of the soil becoming sour. Always wash your pots and allow them to dry before using them, but there is no necessity to crock the smaller pots for the short time they are in use. When you find the cutting is well rooted pot up at once, as cuttings weaken if left in the sand too long. Lift the cutting from the sand carefully (an old dinner fork is useful for this purpose). If a little sand remains on the rootlets it does not matter, but it often happens that a ball of sand has adhered to the roots. This can be washed off by dipping in slightly warmed water, being careful not to break the roots while so doing. The compost for this potting should be two-thirds loam and one-third mixture of sand and residue from a garden fire, all passed through a small mesh sieve. Have your pot three parts filled with soil, place the cutting in position, then fill up the pot, making the soil firm with the fingers. Do not bury the stem of the cutting deeper than it was in the sand. Water thoroughly and return to the propagating frame, or stand in a shady corner of the greenhouse away from draughts for a few days. Later the cutting should be given a position of full sunlight near the glass, and never let it want for water, or failure will result.

#### SECOND POTTING.

When the roots have reached the sides (turn one or two out to see) they should be given a larger pot, those in 1½- and 2-inch pots into 3-inch or 3½-inch, then into 5-inch pots, using the same compost as before with the addition of a little stable manure broken up fine. Keep the ball of soil round the root level with the soil in the fresh pot; in other words, do not bury any more of the stem. A buried stem is liable to cause stem rot, which is fatal.

#### FIRST STOPPING.

The term "stopping" is used to indicate the operation of stopping the growth of the stem by breaking off the top. It is usually the practice to make the first stopping when the plant is well established in the 3-inch pot, but I advocate getting the earlier rooted plants established in a 5-inch pot before performing this operation, as they are then stronger and therefore make stronger and more numerous shoots. When the plant has reached a height of 6 or 7 inches stopping should be done to induce the growth of side shoots. The most simple method of doing this is to take hold of the stem with the left hand at the joint where you wish to make the break, then with the right hand bend over the top until it snaps. Make the break at a point where the stem is firm, which is usually the point where the growth between the joints begins to lengthen, or about 3 to 5 inches above the soil.

#### FINAL POTTING.

When the side shoots have made an inch or two of growth the plant is ready for its final potting into 6- or 7-inch pots. More care

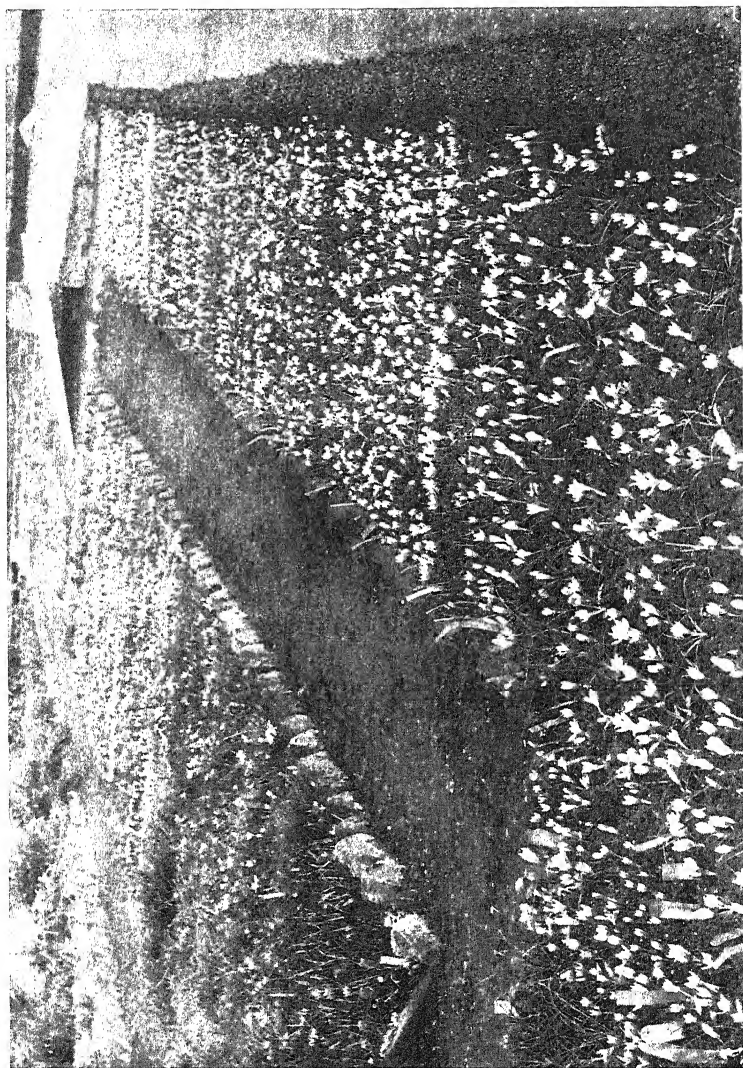


FIG. 60.—CROCUS BEDS AND FRAME AT MYDDELTON HOUSE.

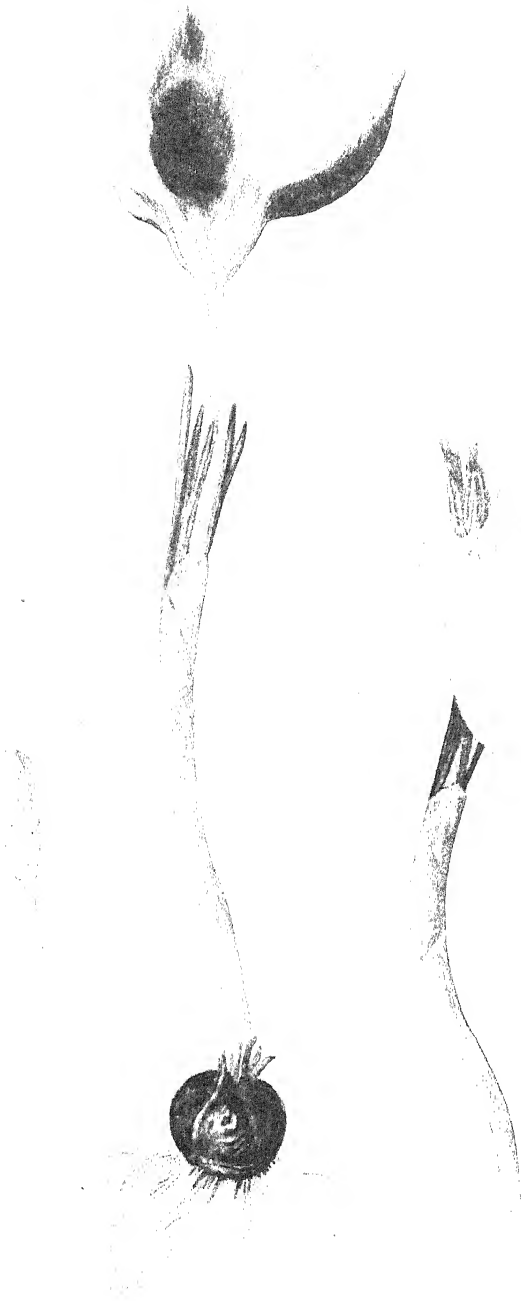


FIG. 61.—CROCUS ALEXANDRI.  
(p. 239)

[To face p. 249.]



should be taken with this potting, as the plant will probably spend the rest of its life in this soil. Crock the pots well, and cover the crocks with fibre, flaky manure, or old leaves, to stop clogging. The compost should be coarse and consist of four parts fibrous loam chopped to about the size of a walnut, one part well-rotted stable manure, one quarter sand, one quarter mortar rubble; to each barrow-load of this add a 6-inch potful of coarse bone meal, and a 10-inch potful of residue of a garden fire. If mortar rubble is not available use other material to keep the soil open, and add a little air-slaked lime. According to the texture of the loam so you vary the other ingredients. As the soil should be made quite firm in the pots it is necessary that ample opening material be used in the compost, which must be nicely moist. If the plants to be potted are at all dry at the roots, water thoroughly an hour or two previously. Let the plants have all the fresh air and sunlight possible (many growers stand them on an ash bed in the open or in frames). If one can accommodate them in the greenhouse it is much easier to control insect pests. Water with care until the roots are working well in the new soil. Carefully secure the side shoots resulting from the last stopping. When they have reached 6 to 8 inches in length they may receive a second stopping by breaking off the first two or three joints as described previously. To get a succession of bloom it is advisable to stop one or two shoots on each plant at intervals of two weeks. It takes about five months for a shoot resulting from a stopping to produce a bloom. Some of the slow-growing varieties take much longer, therefore those varieties should only receive one stopping. Most trade catalogues give a date when the last stopping should be made to produce bloom about the end of the year.

#### SUMMER TREATMENT.

The aim of the treatment for the next few months is to build up the strength of the plants. Allow them to have plenty of sunshine and give them all the fresh air possible. Be liberal with the water-can during the hot sunny days and syringe the foliage at least once a day when the sun is shining brightly. Support the growths with sticks, or the popular circular wire supports which save time and labour.

When the roots are well round the sides of the pots (knock one or two out to find out) food may be given at regular intervals. No hard-and-fast rules can be laid down with regard to feeding, for so much depends on the food and the state of the plant. I advise beginners to use a good organic food that has been specially compounded for Carnations and follow strictly the maker's instructions. I give the most emphatic warning not to use artificial manures containing high percentages of nitrogen, as these only result in sappy growth inviting disease. Remove all side buds as they become large enough to handle, and long jointed side shoots that usually appear near the top of the stem, leaving only the crown or main bud at the top to develop.

## WINTER TREATMENT.

If plants have been standing in the open during the summer, they should be housed by the end of August. Whereas summer treatment is all watering, syringing, and feeding, winter treatment is just the opposite, calling for very careful watering, giving it only when it is really wanted, no syringing, and very little or no feeding. The most important point is the temperature. When the night temperature falls below 50° F. the heating apparatus should be started. Try to keep an even temperature of 45° to 50° at night, with a rise of about 10° during the day. The amount of light should to a great extent be a guide. On dull days keep the temperature down. Should the sunshine send up the temperature no harm will be done, as the extra light will counteract this. The roof ventilators should never be closed right down except during very frosty and foggy weather. Try to maintain a free circulation of air at all times, but avoid draughts.

## PROPAGATION BY SEEDS.

Raising Carnations from seeds is very fascinating to the amateur, inasmuch as it is quite a gamble. One usually obtains a fair proportion of plants which produce single blooms, also a large number of plants inferior to the standard varieties now available; but the chance of obtaining a really good variety is a great incentive to try. Purchase the seed from a reliable source and sow it very thinly in a pan filled with a mixture of loam two parts, sand one part, and leaf soil one part, all made very fine. Cover very lightly with the same mixture and finish off with a sprinkling of sand on top. Water well with a fine spray, cover with glass, and shade with brown paper. Stand the pan on the staging over the hot-water pipes, or in a propagating frame. At the first sign of germination (which should be in about a week) remove the shading and give more air daily until the glass is removed altogether. When the seedlings have made the first pair of true leaves, *i.e.* those that appear after the seed leaves, prick them off into small pots, up to their seed leaves, and place them in a light, warm airy situation. They can then be treated like rooted cuttings, with the one exception that stopping is not necessary.

It is advisable to sow early in the year (January or February), so that the seedlings will have shown their worth before winter comes, thus avoiding filling the greenhouse with worthless plants. It takes from six to eight months from the sowing of seeds to flowering.

## DISEASES AND INSECT PESTS.

The perpetual-flowering Carnation, like most other plants, is not immune from attacks by disease and insect pests, but if ordinary care is taken one is not likely to be seriously troubled. The most common disease met with is called Rust. The first sign of an attack

is a slight swelling on a leaf or stem, which eventually bursts, emitting a dark brown powder-like substance. All growers are not agreed on the conditions which lay the plant open to this disease or whether it is contagious or not. Some think it is caused by extreme dryness at the roots during the hot weather, while others attribute it to excessive moisture on the foliage. One thing is certain, that plants that have been growing in the open during the summer and are housed late in the autumn will nearly always develop it to a greater or less extent, while plants that are left in the open are very seldom attacked; neither are those that are grown entirely under glass. Stagnant humid air will encourage its development. It is not a serious disease; it will run its course and pass off when the sun gets more power in the spring. If the attack is slight it is best to remove the affected leaves and burn them, and to dust the plant with flower of sulphur and lime in equal proportions. A good circulation of air in the house goes a long way towards warding off attacks of this disease.

Another disease the beginner is likely to be confronted with is Stem Rot. This is serious, and once a plant develops it it should be burnt, as it will surely die. The symptom is a gradual drying up of the foliage as the rotting stem ceases to convey nourishment to the plant. The chief causes are potting the plant too deeply, over-watering in dull weather, and using a compost that is too rich. There are several other diseases which growers of Carnations meet with, such as Bud Rot, where the affected bud fails to develop, and Mildew, which is well known to most gardeners. These diseases are seldom met with where the plants are well grown.

#### FAULTS.

There are one or two things that rather worry the beginner. The split calyx, for instance, is one. The chief cause of this among standard varieties is fluctuation of temperature. A variety is often described in a catalogue, "Calyx never splits." I can assure you that the calyx can be split if you allow certain conditions to arise, just in the same way as you can split an iron water pipe by expanding the water inside. To give an instance—You have a bud just about to show colour, when along comes a sunny day in early spring or late autumn. The temperature rises to round about 70°, and you let the fire low. The plant will be growing well, but at sunset the temperature drops very quickly to about 40°. The cold air cooling down the calyx causes it to grow more slowly or even to stop for the time being. The petals inside, still retaining the warmth of the sun, continue to swell, then the calyx has to break. The remedy is to endeavour to avoid sudden changes in temperature by careful stoking. Watering or feeding with liquid manure when the soil is on the dry side will have the same effect. Keep the soil on the moist side while buds are swelling.

Leaf Curl is another thing that is likely to worry some people. It occurs chiefly in the early spring, when the leaves at the tips of the

growths fail to unfold properly. The cause is a check in the growth through drying out or allowing the temperature to fall very low. Carefully unfold the leaves that stick and all will be well.

### PESTS.

The most serious and the most common pest is what is known as Red Spider. It is a minute animal and generally red, but varies in colour according to its age. It lays eggs (which are perfectly globular and transparent) on the underside of the leaf. These hatch out into light-coloured mites which gradually deepen in colour until fully grown, which takes about ten days. The mites multiply very quickly, and in a short time, if not checked, will infest all the plants in the house. They do an immense amount of damage, causing the leaves to turn a light unhealthy colour and eventually to die. The conditions favourable to this pest are hot, dry, sunny periods in midsummer, and once it gets well established it is difficult to eradicate. Only within the last few years has it been found that by vaporizing naphthalene over a lamp the mites may be killed, but those who attempt this must carry out the instructions for its use very closely, or more harm than good will be done. Prevention is better than cure, so keep a sharp look-out with a magnifying glass on the underside of the leaves as soon as the hot weather sets in. Should you find a trace of the mites dissolve one ounce of common salt in one gallon of water, lay the plant on its side and spray it all over, then in a few hours syringe it vigorously with plain water so as to wash off the mites and their eggs.

Another common pest is Green Fly or Aphis. This needs no description, as most gardeners know it only too well. It can be controlled by nicotine fumigation, but is very persistent at times, and it will take more than one fumigation to get rid of it.

Thrips is a pest not very well known, but very troublesome. It is a very small, winged insect that enters the flower bud in its early stages and disfigures the bloom by sucking out the sap. Its ravages can be seen more clearly in the dark coloured varieties by the white streaks and blotches on the petals. It also attacks the young growths in the same way as the green fly. It gets right into the heart of the growth, and is therefore rather difficult to get rid of with one fumigation. However, if one keeps a sharp look-out in early autumn it will not present very serious difficulties.

Earwigs are very fond of Carnation blooms. They especially like to feed on the base of the petals, and sometimes in a single night will sever every petal at the base and utterly destroy the bloom. The most certain remedy is to look over your blooms and pick them off during the warm summer evenings at dusk, as they are then usually on the outside only, hiding in the calyx during the day.



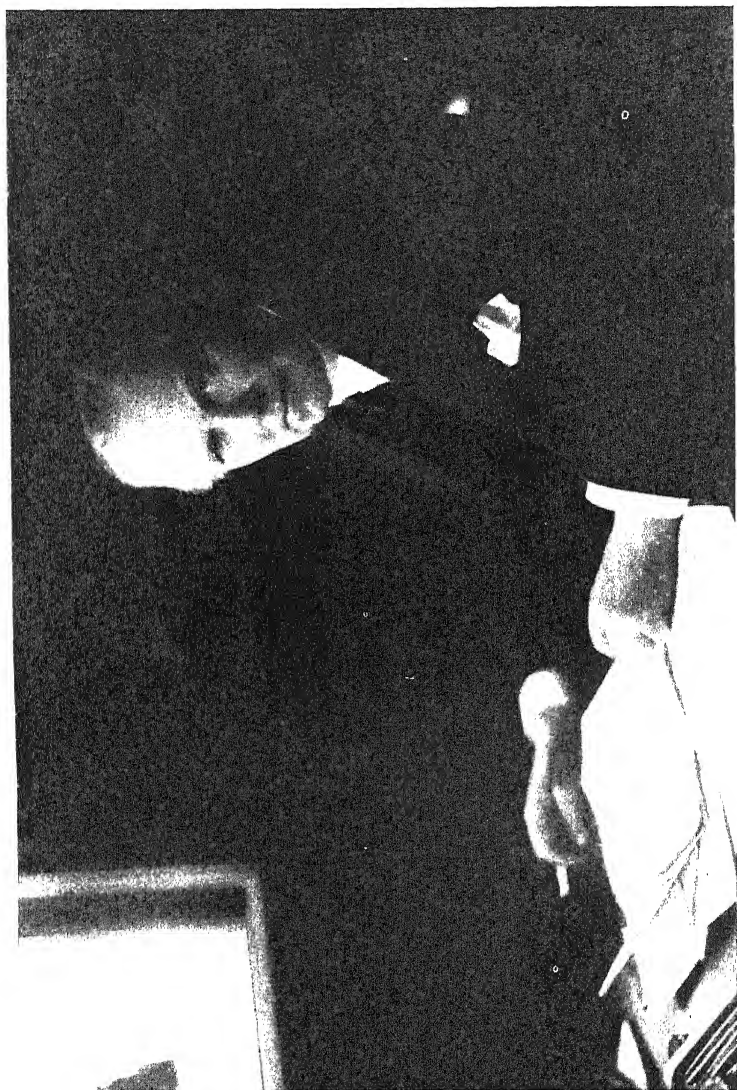


FIG. 62.—LORD WAKEHURST, PRESIDENT R.H.S. 1929-31.

[To face p. 233.

## LORD WAKEHURST, M.A., LL.D., F.L.S., V.M.H.

GERALD LODER will be counted among the greatest gardeners of our generation. His zeal for plant growing was stimulated by the possession of Wakehurst. It was purchased by him in 1903, and in the perfect surroundings of that beautiful house, in the enviable climate and soil of southern mid-Sussex, he brought together in thirty-two years a collection of trees and shrubs which ranks with any in Europe.

Of the eight sons of Sir ROBERT LODER three distinguished themselves in horticulture. The astonishing success in the growing of rare plants and in the production of new *Rhododendron* hybrids at Leonardslee by his eldest brother, Sir EDMUND LODER, must have been a great incentive to him.

This is not the place to speak of LODER's political life—he represented Brighton in Parliament for sixteen years—or of his work for the Southern Railway—he became joint deputy Chairman of the new Combination of Southern lines in 1923, and Chairman in 1932.

He was elected to the Council of the R.H.S. in 1920, and on the death of Lord LAMBOURNE, in 1929, he succeeded him as President. He gave three Presidential Addresses, but retired from his office in 1931, though remaining on the Council.

His love of arboriculture and forestry was as great as of horticulture ; he served in 1926–27 as President of the Royal Arboricultural Society and seldom missed their annual expeditions. He was especially interested in the Coniferae, and took a keen part in the work of the 1931 Conifer Conference. It was his particular wish that it should be as notable a contribution to the knowledge of and interest in that subject as was the Conference of forty years earlier, for which Dr. MASTERS was principally responsible.

With the exception of *Rhododendrons* and *Conifers*, LODER's principal gardening interest was in growing the plants of New Zealand. In no garden in England could so many species from those islands be seen. He presented a Cup to be awarded in New Zealand annually for the best collection of native plants—a prize that is now keenly competed for.

At the Council table his judgment of men and wide experience of affairs was appreciated by his colleagues. We shall not forget his kindness to all who were brought into contact with him at the R.H.S. No one was more regular in his attendance, and no one more ready to help with information or advice. Many of us will remember the fat bundles of notes with which his pockets bulged, and the apparent disorder of his library where the publications of innumerable societies strewed the floor and the chairs. Yet, despite his occasional pre-occupation of manner, he could provide any piece of abstruse botanical information with ready accuracy.

LODER was one of the founders of the Rhododendron and the Garden Societies. He hardly ever missed a meeting of either till, to his distress, in the last eighteen months the weakness of his illness prevented him. Of his generosity the writer of this notice has proofs, both on his bookshelves and in his garden. Two examples may be permitted: Once when he asked for the gift of a shrub LODER sent it; not till some time afterwards did the contrite recipient find out that, as there was none at Wakehurst, European Nurseries had been searched to find it. During the War LODER conceived and carried out the delightful plan of presenting to SARGENT the seven volumes and index of ELWES and HENRY's great book, bound in eight different British woods, and with the signatures of about forty of SARGENT's British admirers on the title-page. The Red Cross Sale at Christie's profited twice over by that purchase.

In 1921 he presented to the R.H.S. the Loder Rhododendron Cup to commemorate his brother Edmund.

LODER served for many years on the Council of the Linnæan Society and was Vice-President in 1930-31. Few were more familiar with horticultural and botanical literature, of which his own library is a very notable collection. His knowledge was of the greatest service to the Society's Library Committee. The publications of the R.H.S. were appreciatively read and criticized by him, and the Botanical Magazine was his especial interest. In no small measure he was responsible for the undertaking by the Society of the heavy task of the revision of Pritzel, now published as *Index Londinensis*.

Born on October 25, 1861, he died at Wakehurst on April 30, 1935, and was buried at East Slaughtam, Sussex.

We shall long remember with gratitude the days of his leadership of our Society.

F. R. S. BALFOUR.



## NEWER PRIMULAS.

By N. K. GOULD.

[Read April 7, 1936; T. HAY, Esq., M.V.O., V.M.H., in the Chair.]

IN preparing my notes for this talk on Newer Primulas, I have had the choice of two modes of treatment. The first was to list, as far as possible, all the species and varieties which have been discovered since the last Primula Conference in 1928, and to present this, together with some particulars of their respective places of origin and the circumstances of their collection. But such a paper would be of botanical rather than of horticultural interest, besides suffering the disadvantage of excluding mention of several plants which, while not new to science, have recently made their first appearance in gardens.

I have therefore pursued the alternative course of collecting notes and pictures of species which have actually been grown and flowered in British gardens, and most of which I have seen. I cannot claim close acquaintance with many of these new species, for they are necessarily rare in cultivation, since seeds and plants are seldom introduced in large numbers. Moreover, some can only be grown by the most skilled cultivators, so that one's opportunities of seeing them are few. Nor shall I presume to offer you advice on their cultivation.

There is a quality peculiar to Primulas which makes them attractive to almost everyone, and it is indicative of their wide appeal that no fewer than four Conferences have been held by this Society on a genus of plants all, for practical purposes, herbaceous, all of modest dimensions, and many monocarpic or of short duration. The appearance of a new Primula at one of our shows evokes not only the eager interest of visitors, but also the generosity of the Committee which recommends awards, while the vast number of illustrations of Primulas scattered over the pages of horticultural and botanical journals is further indication of their appeal. Many of the most ardent cultivators of rare and choice plants seize every chance of acquiring a new Primula, and one hesitates to conclude that rarity alone can make an unknown plant so desirable. It may be that a hint of some individual grace or beauty has been given in a collector's field-note or has escaped from the terse phraseology of a botanist's description.

Two problems confront us in the cultivation of Primulas, particularly in regard to the Asiatic species. The first is to provide suitable conditions. Many of them grow in Nature in regions of cold, dry winters, where the plant, often covered with dry snow, enjoys an undisturbed resting-period. Their renewed development in spring goes on apace and their flowering is often succeeded by very active growth of the foliage during wet summers. Our own wet winters, with

alternating spells of cold and mild weather, are apt to encourage precocious growth and our summer droughts restrict very seriously the normal leaf- and root-development.

The second difficulty is that many are monocarpic, so that stocks can only be maintained by raising seedlings. Some are shy seeders, in fact some, like the beautiful *Primula siamensis*, are probably self-sterile and yield no seed unless crossed.

Vegetative propagation may be employed in some cases, and where division of the crowns is not practicable it may yet be possible to raise new plants from leaf- or root-cuttings. I shall mention one or two such cases later.

Shortly before the last Primula Conference, Sir WM. WRIGHT SMITH and the late Mr. GEORGE FORREST published a revision of the sections of the genus, which was subsequently reprinted, with some alterations, in the Report of the Conference, and I have so arranged my notes as to deal with the species under the groups to which they belong.

In the first section, Cortusoides, there are several species, such as *P. Veitchii*, *P. Sieboldii* and *P. heucherifolia*, which have been in cultivation a long time and are well known. Among the newer ones, I think *P. eucyclia* is noteworthy. At the last Conference I expressed the view that this small Western Chinese plant looked too frail to possess much constitution, but at Wisley it has turned out to be a good perennial for the alpine house. I am assured, however, by Mr. MUSGRAVE that this happy experience is by no means general. We find that it requires to be kept moist in the winter, and can be propagated in summer by means of its little axillary runners. The flowers are rosy or purplish pink and fringed like those of *P. Normaniana*, one of Capt. KINGDON WARD's more recent introductions. This is a larger plant than *P. eucyclia*, with larger flowers, and as KINGDON WARD describes it—a massive, leafy plant growing in rocky gullies in the deep shade of Rhododendron and Tsuga forests—it must be very handsome. Capt. WARD also speaks highly of the Tibetan *P. latisecta* in its woodland home. Grown as a pot plant it is bright, although not highly decorative, with crimson, white-eyed flowers and prettily cut rugose leaves.

Of the larger members of this section, I should mention the High-down variety of *P. lichiangensis*, a robust and free-flowering novelty which was given the Award of Merit at Chelsea three years ago when shown by Major STERN.

In the section Bullatae we have one very interesting new species, *P. Rockii* (fig. 63), from S.W. Szechwan, where it grows on limestone cliffs at altitudes of 9,000 to 13,000 feet. Its rough, toothed leaves and rich yellow flowers remind one of *P. Forrestii*, of the same section, but *P. Rockii* belongs rather to the group of smaller species such as *P. Dubernardiana* (fig. 64), a reliable pink-flowered plant for the alpine house. We have several forms of the last-named species, some being of inferior value, with pale, starry flowers and narrow leaves. I am

told that *P. Rockii* is perfectly hardy, but I do not regard the section as one whose members can be readily established in the open.

Two years ago Lord ABERCONWAY exhibited two very rare members of the Dryadifolia section. They are *P. chlorodryas* and *P. cyclophylla*. They are both tiny plants an inch or two in height: *P. chlorodryas* yellow-flowered, from N.W. Yunnan, and *P. cyclophylla*, with the pink flowers more typical of its section, from a habitat a few miles westward in N.E. Burma.

To the enthusiasm and skill of our Chairman we are indebted for the exhibition, in recent years, of several fine new species. Outstanding among these is *P. Wigramiana*, first discovered in 1931 growing at an altitude of 17,500 feet in the mountains of Nepal. It is, in my opinion, so lovely a plant as to bear comparison with *P. nutans*, from which it differs in its fewer ivory-white flowers. Closely allied is *P. Wollastonii*, another beautiful Primula of the same section (Soldanelloideae), first collected by the late Dr. WOLLASTON at altitudes of 13,000 to 14,000 feet during the Mount Everest expedition of 1921. No seeds were gathered on that occasion, and it was not until ten years later that the plant was introduced to cultivation, when it was successfully raised and flowered in London by Mr. HAY, and in gardens in other parts of the country. Like most species in the same section, it is a difficult plant. It is intolerant of drought during the growing season and does not seed freely, but Mr. R. E. COOPER has lately described, in *The New Flora and Silva*, how it lends itself to propagation by root-cuttings and how, even without manipulation, parts of mature roots, having become exposed to the air, were observed to form small green growths which developed into rosettes of leaves. Along with *P. Wollastonii*, in E. Nepal, grows another white-flowered species, *P. Buryana*, which may be reckoned one of the most difficult of its section.

The most recent addition to this group is the remarkable *P. Sherriiffae*, which comes from the somewhat low elevation of 5,000 feet in S.E. Bhutan, at the eastern end of the Himalayan Range. The first plant exhibited was a seedling only eight months old, which Mr. HAY brought to Olympia last autumn, and there is a specimen in the Show to-day. It is in every way an outstanding Primula, but I think its most striking features are the great size and beautiful lavender colour of the corolla-limb and the extreme length of tube. It is early as yet to say how it is going to behave in cultivation, but the low altitude from which it came does not suggest that it will be easy.

I turn now to the Petiolarid Primulas: a section at once puzzling to the botanist and a challenge to the horticulturist, a section numerically large and distributed from Kashmir along the Himalayan Range into Burma and Western China. Only one, *P. Winteri*, is at all well represented in gardens, and many of my audience will know from experience that even this is not an easy plant to grow. *P. Winteri alba*, the white variety, appears fairly frequently at the spring exhibitions, but it does not surpass the lavender type in beauty. *P. Edge-*

*worthii* is a newcomer to our gardens. In appearance it is not dissimilar from *P. Winteri*, but the foliage is less conspicuously farinose and the more purple flowers are produced a little later in the year. There is, however, the more important difference, that *P. Edgeworthii* may be propagated more readily. Young plants are raised from leaf-cuttings without difficulty, and the plant may be divided into a number of small crowns without risk. The late Dr. STAPF regarded *P. Winteri* and *P. Edgeworthii* as seasonal forms of one and the same species, and retained the earlier name, which explains the appearance in the Botanical Magazine of a picture (t. 9064) of what is generally known as *P. Winteri*, bearing the name *P. Edgeworthii*. In the article I mentioned a few moments ago, Mr. R. E. COOPER favours the retention of both specific names, and states further that *P. Edgeworthii* is identical with a plant figured in the Botanical Magazine (t. 7079 B) as *P. petiolaris* var. *nana*. If this be so, we must cease to regard *P. Edgeworthii* as new to horticulture, for the plant figured was exhibited at a meeting of this Society in 1889 by Professor MICHAEL FOSTER.

A strong family likeness may be observed between the plant in this drawing and a third Western Himalayan species, *P. scapigera* (fig. 65), a new one which we had the very great pleasure of seeing a fortnight ago, when it was admirably shown by Mr. WELLS. This again recalls *P. Winteri*, but the colour of the flower is a bright rosy mauve, and leaves do not carry the heavy coating of meal so characteristic of that species. Like *P. Edgeworthii*, it can be multiplied by leaf-cuttings, and I understand that it has survived at least one year in the open at Edinburgh.

The next plant on my list has an interesting history. *P. sonchifolia* was known half a century ago, and collectors have written from time to time of the awe-inspiring sight of its blue flowers expanding even before the winter snows had disappeared. In 1911 FORREST sent home seed from N.W. Yunnan, and, from seed collected fourteen years later by KINGDON WARD, plants were raised at Edinburgh which reached the flowering stage, but from neither of these sendings was the species established in British gardens. Seed was again received in 1929 from the neighbourhood of Hpimaw in Upper Burma, and this time a considerable number of vigorous seedlings was secured.

The development of *P. sonchifolia*, in common with that of various other Petiolarid Primulas, proceeds through several distinct stages. They are early-flowering woodland plants of regions which experience dry conditions in autumn, winter and early spring, followed by copious rainfall during the summer. Their early flowers are rapidly followed by seed-production, and at the same time come the leaves, which grow to a great size in the wet season. With the approach of winter the foliage dies away, but in the heart of the plant remains a stout resting bud, containing flowers and rudimentary leaves closely wrapped in scale-leaves. It was in this condition that a consignment of plants of *P. sonchifolia*, packed in lengths of bamboo stem and transported in cold storage, was sent home in 1931 by the Governor of Burma and

received by Mr. HAY. A few weeks later the same plants were shown at a meeting here. The clusters of purple flowers, nestling in the soft green of the young leaves, whose bases were still hidden by the red, mealy bud-scales, were very handsome; and if the colour was less vividly blue than one had expected, one must bear in mind how vastly different were the conditions under which the plants expanded their flowers from those under which, a few months before, the buds were formed.

[Seedlings have been raised from home-grown seed, and the species seems at last to be fairly well established in British gardens. At Wisley and in other Southern gardens it is not happy, but it thrives at Edinburgh Royal Botanic Garden and elsewhere in Scotland. Separation of the fleshy winter-buds seems indicated as a means of propagation where seeds are not available.

A pleasant surprise awaited those of us who attended the Show a fortnight ago, in the shape of a fine plant of *P. Clarkei* (fig. 66), shown by Lord ABERCONWAY. This Kashmir species was first collected more than fifty years ago, but I do not think it has been in cultivation before. The plate which accompanies Dr. WATT's original description depicts a plant with smaller flowers than the one exhibited, but the inclusion of some half-grown capsules and large leaves rather suggests that it was drawn from a specimen gathered late in the flowering season, and it is possible that the flowers diminish in size after a while. The flowers of Lord ABERCONWAY's plant are about  $\frac{1}{2}$  inch across, of a pretty pink with a yellow eye.

The section *Rotundifolia* is yet another which is difficult in cultivation. At the time of the last Conference, *P. Baileyana* was still with us: a very charming plant with blue-lavender flowers, but a shy seeder and impossible to keep. The Sikkim *P. cardiophylla* can be grown and has been in cultivation for some years, on and off; and lately the true *P. rotundifolia* (fig. 67) from Nepal, almost identical with the last named, has been grown and flowered in this country for the first time.

The very large section *Nivales* has representatives in Western and S.W. China, Siberia and N.W. America, and some of these are reasonably amenable. *P. chionantha* is probably the best garden plant of the lot, but some of the coloured ones, like *P. sinopurpurea* and *P. melanops* from China, can be grown in partial shade if given perfect drainage, and are very attractive plants. Two species inhabit the Pribilof Islands in the Bering Sea: *P. eximia* is found on the Island of St. Paul, and the very closely allied *P. Macounii* on the St. George Island. The former, a mealy plant with pale rose flowers, was introduced some four years ago and has been flowered by Mr. HAY.

You may think that I have spent quite enough of my time talking of Primulas which cannot easily be grown, and as I feel that this paper would be incomplete without some reference to what may be termed florists' varieties, I propose to enumerate briefly some of the newer varieties of *P. malacoides* and *P. sinensis*, in which such tremendous

development has been taking place. The species *P. malacoides* was first generally available in 1912, and though valuable as an early-flowering plant for the cool greenhouse, it was too flimsy and colourless to be really decorative. Improvement soon took place both in colour and size of flower and in habit. 'Sutton's Pink' was an early variety of better substance than the type, later superseded by 'Advance,' while the more recent 'Achievement' and 'Eclipse' were notable for the increased size of their flowers. Among the more modern varieties which deserve mention are 'Carmine Pink,' of good, erect habit and large, well-spaced flowers; 'Giant Salmon Rose,' another sturdy, brightly-coloured variety; and 'Duchess of Kent' (fig. 68), with flowers of fine form and an enchanting shade of Rose du Barri. 'Presdale's Double' is a somewhat fimbriate mauve variety decorative for a rather short season; 'Exquisite,' a free and continuous blooming semi-double rose-pink of compact habit. A variety of *P. malacoides*, shown a few weeks ago under the name *fimbriata*, has very effectively crimped flowers of deep rosy mauve.

*P. sinensis* is remarkable in that it was introduced to cultivation in this country from Chinese gardens: the wild type has so far never been discovered. Formerly the Hupeh species *P. calciophila* was thought to be the wild *sinensis*, but the two will not cross and are now considered specifically distinct. *P. sinensis* has produced an infinite number of forms. Here are examples of some of the newer ones: 'Dazzler' is one of the most brilliant, with vivid orange-red, greenish-eyed flowers and dark green foliage; 'Giant Salmon Pink' is notable for its immense broad-petalled flowers of great substance; 'Reading Blue' is one of the best blue varieties, paler in colour but otherwise similar to 'The Czar'; 'Double White Purity' is a plant of fine form with the flower-heads well disposed above the leaves, 'Queen of Pinks' being its pink-flowered counterpart. Equally attractive are the varieties of *Stellata* type, in which steady improvement in size and colour has given us many fine varieties without loss of the graceful, open habit.

In conclusion, I would like to acknowledge the kindness of Mr. HAY, Sir WM. WRIGHT SMITH, Messrs. SUTTON, and Mr. F. C. BROWN in allowing me the use of many of the slides which have illustrated this lecture.

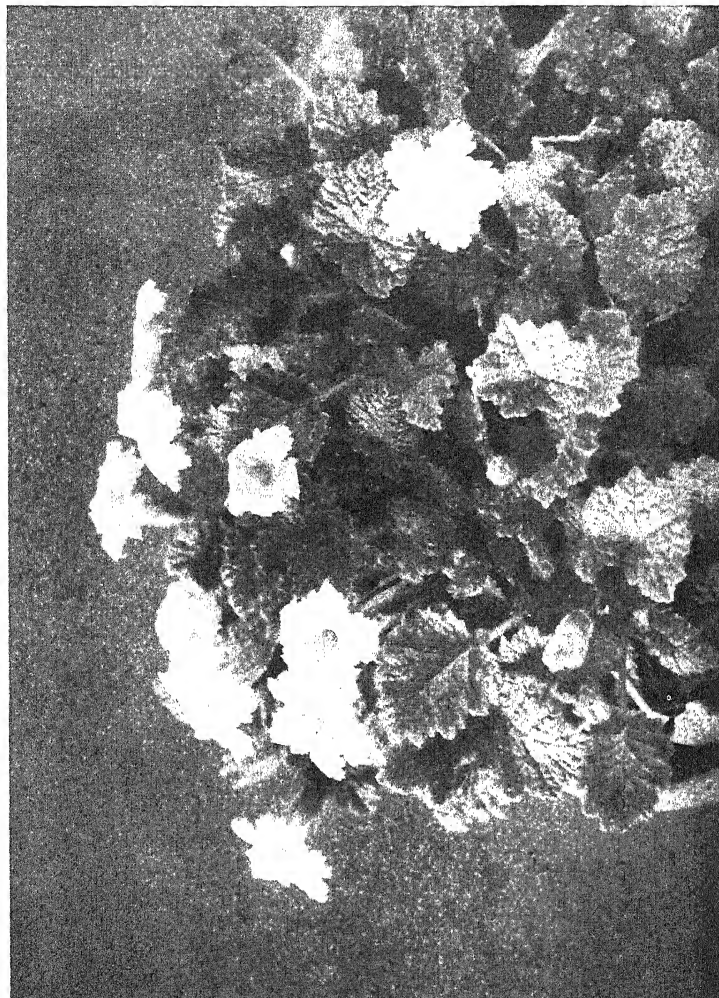


FIG. 63.—PRIMULA ROCKII.  
(p. 256)

[To face p. 260.]

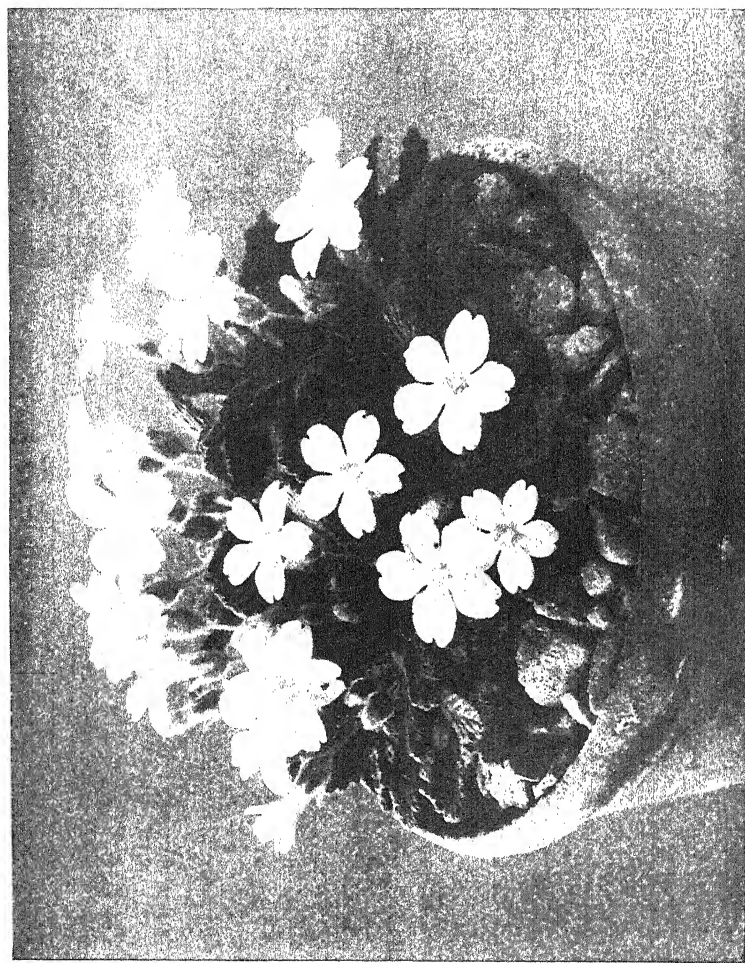


FIG. 64.—PRIMULA DUBERNARDIANA.  
(p. 256)



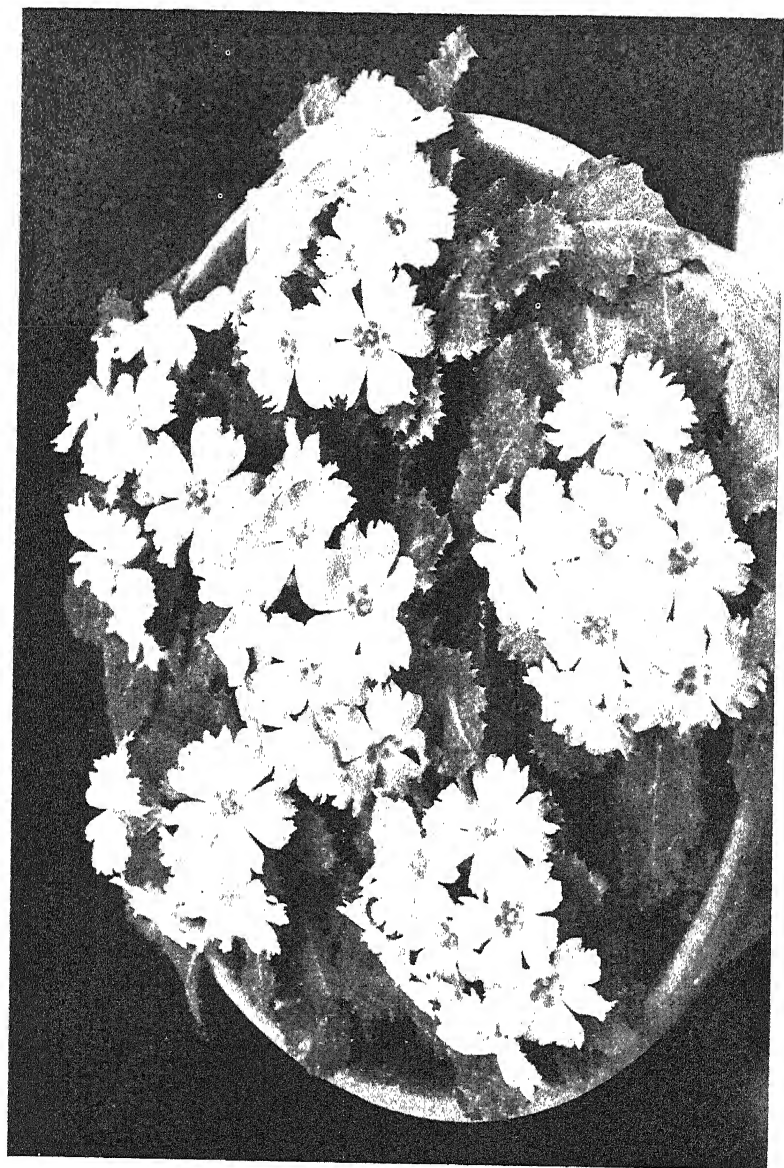


FIG. 65.—*PRIMULA SCAPIGERA*.  
(p. 258)



FIG. 66.—PRIMULA CLARKII.  
(D. 250)

[To face p. 261.

## PLANTS TO WHICH AWARDS HAVE BEEN MADE IN 1936.

**Clematis Armandii 'Apple Blossom.'** F.C.C. April 7, 1936. From Messrs. Russell, Richmond. This beautiful, free-flowering variety of the well-known evergreen *C. Armandii* received the Award of Merit on March 9, 1926. The white flowers, tinged externally with pink, are carried in dense, axillary clusters.

**Cymbidium × 'Carisbrook' var. 'Dusky Monarch.'** A.M. April 7, 1936. From Messrs. McBean, Cooksbridge. In this distinct hybrid, the result of crossing 'Ceres' with 'Ralph Sander,' the flowers are reddish-plum, the labellum yellowish with a crimson margin.

**Cymbidium × 'Cassandra,' Dell Park var.** A.M. April 7, 1936. From Baron Bruno Schröder, Englefield Green, Surrey. A beautiful hybrid obtained by crossing *Alexanderi* with 'Goosander.' On the present occasion the spike bore 6 well-formed flowers, blush-white shaded with rose-pink, the labellum spotted with crimson, and the column dark rose.

**Cymbidium × 'Louis Sander,' Cooke's var.** A.M. April 7, 1936. From Sir William Cooke, Bart., Hampstead Norris, Berks. A pleasing addition to the genus. The result of crossing 'Ceres' with *Alexanderi*. The spike bore 4 large flowers, delicate rose-pink, with darker venation, the labellum bordered with rose.

**Cymbidium × 'Madonna' var. 'Stella Brocklebank.'** A.M. April 21, 1936. From Capt. G. S. Brocklebank, Chingley Manor, Flimwell. The tall spike bore 8 large white flowers, the labellum of each being marked with crimson spots, and the column dark rose. Obtained by crossing *C. × Alexanderi* with *C. × 'Memoria P. W. Janssen.'*

**Cymbidium × 'Morvyth,' Brockhurst var.** A.M. April 21, 1936. From F. J. Hanbury, Esq., Brockhurst, East Grinstead. The erect spike carried 5 large flowers, which are white with a few crimson spots on the labellum. The parentage is *C. × Alexanderi* × *C. × 'Redstart.'*

**Cymbidium × 'Pharos' var. 'Emperor.'** A.M. April 7, 1936. From Messrs. H. G. Alexander, Tetbury. An attractive hybrid obtained by crossing 'Flamingo' with 'Warbler.' The spike bore 8 large flowers, ivory white, the labellum spotted with crimson.

**Cymbidium × 'Susette' var. 'Perfection.'** A.M. April 7, 1936. From Messrs. McBean. The plant carried two spikes with a total of 20 carmine flowers, the labellum somewhat lighter and with reddish spots. It is the result of crossing *C. insigne* with 'Magali Sander.'

**Hippeastrum 'Carolyn.'** A.M. April 7, 1936. From Mrs. Walter Burns, North Myms Park, Hatfield. A very handsome rich blood-red variety with large flowers. The segments of the perianth are very firm and of good substance.

**Hippeastrum 'Clive Cookson.'** A.M. April 21, 1936. From Clive Cookson, Esq. (gr. Mr. W. J. Stables), Hexham. A very handsome variety with large, glowing vermilion flowers deepening to blood-red at the centre. The segments are broad and reflexed. The open flowers are of perfect form and measure slightly over 7 inches across at the widest part.

**Narcissus 'Bodilly.'** F.C.C. April 7, 1936, as a variety for show purposes. Shown by Mr. J. L. Richardson, Prospect House, Waterford, and raised by Mr. P. D. Williams. A fine bicolor *incomparabilis* variety (Division 2B). This variety received an Award of Merit on March 24, 1925. (See JOURNAL R.H.S. 51, p. lxxii, where the classification is incorrectly given as 4A.)

**Narcissus 'Crocus.'** F.C.C. April 21, 1936. Raised by Mr. P. D. Williams. An *incomparabilis* variety (Division 2A), incorrectly described as a trumpet variety when it received an Award of Merit on April 16, 1935. (See JOURNAL R.H.S. 60, p. 272.) The flowers, which were well-poised on stout stems, 16 to 17 inches long, were about  $4\frac{1}{2}$  inches in diameter. The perianth segments were broad, overlapping, smooth, and chrome-yellow, the outer segments being  $1\frac{1}{8}$  inch long. The corona, which was  $1\frac{1}{8}$  inch long, and 2 inches across the reflexed mouth, was dark chrome-yellow. Twelve flowers measured were all of the proportions of an *incomparabilis* variety. Shown by Mr. J. L. Richardson.

**Narcissus 'Fairy King.'** A.M. April 16, 1936. Raised by Mr. A. M. Wilson and shown by Mr. Guy L. Wilson, Broughshane. An attractive little *incomparabilis* variety (Division 2A) with flowers about  $3\frac{1}{2}$  inches in diameter borne on 18-inch stems. The chrome-yellow perianth segments were smooth, overlapping, and of good substance. The neat orange-cadmium cup was half the length of the segments and 1 inch across the mouth.

**Narcissus 'Franklin.'** A.M. April 16, 1936. Raised and shown by Mr. A. M. Wilson, Presteign. A well-proportioned *incomparabilis* variety (Division 2A) with flowers about  $4\frac{1}{2}$  inches in diameter, well poised on stout 19-inch stems. The broad deep-primrose-yellow segments were  $1\frac{3}{4}$  inch long. The deep-canary-yellow corona was  $1\frac{1}{2}$  inch long and nearly 2 inches across at the margin, which was reflexed and lightly frilled.

**Narcissus 'Mr. Jinks.'** A.M. April 16, 1936. Raised by the Brodie of Brodie and shown by Mr. J. L. Richardson. A well-formed bicolor *Barrii* (Division 3B) with flowers about  $3\frac{1}{2}$  inches in diameter, borne on stout 17-inch stems. The smooth, white perianth segments were broad, overlapping and of good substance. The corona, which was an inch in diameter, was yellow at the base, passing to fiery orange at the frilled margin.

**Narcissus 'Porthilly.'** F.C.C. April 7, 1936, as a variety for show. A richly coloured *incomparabilis* variety (Division 2A) raised by Mr. P. D. Williams and shown by Mr. J. L. Richardson. This variety received an Award of Merit on April 11, 1933. (See JOURNAL R.H.S. 59, p. xlv.)

**Narcissus 'Rosslare.'** A.M. April 16, 1936. Raised by the Brodie of Brodie and shown by Mr. J. L. Richardson. A bold *incomparabilis* variety (Division 2A) with flowers  $3\frac{3}{4}$  inches in diameter, well poised on stout 18-inch stems. The flat primrose-yellow perianth was composed of broad, overlapping segments  $1\frac{1}{2}$  inch long. The cup, which was half the length of the segments and  $1\frac{1}{2}$  inch across the mouth, was golden at the base, passing rapidly to bright Chinese orange.

**Narcissus 'St. Egwin.'** F.C.C. April 16, 1936. Raised by Mr. P. D. Williams and shown by Mr. J. L. Richardson. A large-flowered *Barrii* (Division 3A) which received an Award of Merit on April 12, 1927. (See JOURNAL R.H.S. 53, p. lxxvi.)

**Narcissus 'Solid Gold.'** F.C.C. April 16, 1936. Raised and shown by the Donard Nursery Co., Newcastle, Co. Down. A refined yellow trumpet variety (Division 1A) which received an Award of Merit on April 14, 1931. (See JOURNAL R.H.S. 57, p. xliv.)

**Narcissus 'Trenoon.'** F.C.C. April 16, 1936. Raised by Mr. P. D. Williams and shown by Mr. J. L. Richardson. A yellow *incomparabilis* variety (Division 2A) which received an Award of Merit on April 2, 1935. (See JOURNAL R.H.S. 60, p. 223.)

**Odontoglossum** × **'Cythera'** var. **'Grandeur.'** F.C.C. April 21, 1936. From Messrs. Charlesworth, Haywards Heath. This elegant hybrid bore an arching spike of 9 large and well-formed flowers, effectively marked with reddish blotches and spots on a rose-tinted ground. Produced by crossing *O.* × **'President Poincaré'** with *O.* × **'Tityus.'**

**Odontoglossum** × **'Palmyras Queen,'** Clovelly var. A.M. April 7, 1936. From Frederick J. Hanbury, Esq., East Grinstead. A distinct *Odontoglossum*, obtained by crossing **'Purple Queen'** with **'St. James.'** The spike bore 6 well-formed flowers of medium size, chocolate-crimson, the segments bordered with white.

**Oxylobium ellipticum.** A.M. April 21, 1936. From Lt.-Col. L. C. R. Messel, O.B.E., Handcross. This pretty leguminous sub-shrub from Tasmania has long been known in gardens, and was figured a century ago at t. 3249 of the Botanical Magazine. It has leathery, elliptical leaves  $\frac{3}{4}$  inch long, with recurved margins; and small, orange, scarlet-striped flowers arranged 20 or 30 together in dense heads at the ends of short lateral growths.

**Primula brevifolia.** A.M. April 21, 1936. From Lord Aberconway, Bodnant. *Primula brevifolia* may be regarded as a sub-species of *P. amethystina*, which has a fairly wide distribution in W. Yunnan and S.W. Szechwan. Seed has been secured by several collectors, and flowering plants have occasionally been raised in British gardens during the past twenty years. *P. brevifolia* forms a flattish rosette of ovate, toothed, green leaves up to  $1\frac{1}{2}$  inch long. The narrowly bell-shaped, violet-blue flowers have curiously toothed, incurved lobes, and are borne in 7-9 flowered heads on slender 6-inch scapes.

**Primula Sherriffiae.** A.M. April 7, 1936. From T. Hay, Esq., Hyde Park, London, W. 2. A very beautiful Soldanelloid *Primula*, which received the Preliminary Commendation when exhibited for

the first time on September 25, 1935, by Mr. Hay. The foliage is similar in appearance to that of *P. nutans*, while the lavender, white-eyed flowers are disposed in a condensed spike of from three to seven at the head of a mealy scape several inches high. The corolla has a slender tube two inches long and five rounded, spreading lobes, each over  $\frac{1}{2}$  inch long.

***Prunus mutabilis*. A.M.** April 21, 1936. From Collingwood Ingram, Esq., Benenden. *Prunus mutabilis*, the Hill Cherry of Japan, is a long-lived tree up to 50 feet in height, flowering with increased freedom as it gets older. In the Koganei Avenue, near Tokyo, there are trees of this species over a century old. The flattened, white flowers are carried in lax clusters of 3 to 4, their purity intensified by the beautiful purple tint of the expanding foliage.

***Prunus Persica alba pendula*. A.M.** April 7, 1936. From Messrs. Russell, Richmond. A pure white, double-flowered Peach. The small tree exhibited bore plenty of medium-sized flowers evenly disposed along its pendent branches.

***Sarcococca Hookeriana*. A.M.** April 7, 1936. From Lord Aberconway, Bodnant. An attractive dwarf evergreen shrub from Sikkim, where it grows at altitudes of 7,000 to 8,000 ft. The lustrous and somewhat leathery dark green leaves are lanceolate, and bear in their axils at Christmas time many inconspicuous ivory-white flowers, which are soon followed by shining black berries.

***Serruria florida*. A.M.** April 7, 1936. From the Hon. Mrs. Ryder, Durns, Beaulieu. This pretty South African species of Proteaceae forms a weak-stemmed bush about three feet in height, the branches of which are covered in the upper parts with grey-green bipinnate leaves divided into filiform segments. The terminal flower-heads of small rosy flowers are enclosed by white, incurved bracts  $\frac{1}{2}$  to 1 inch long.

## THE AWARD OF GARDEN MERIT.—XXXIII.\*

By F. J. CHITTENDEN, F.L.S., V.M.H.

## 202. ANEMONE APENNINA.

*Award of Garden Merit, June 11, 1934.*

In habit *Anemone apennina* is very similar to our own *A. nemorosa*, though the teeth of its leaves are somewhat less pointed and its underground stems are thicker and shorter. It differs in its flowers having ten to eighteen sepals (there are no petals in Anemones, but the sepals are coloured) instead of about six (five to nine) as in *A. nemorosa* and being slightly hairy at the base of the sepals outside instead of being quite devoid of hairs as in *A. nemorosa*. The narrower, more numerous sepals, however, give *A. apennina* quite a distinct appearance and they are, moreover, in their wild habitats usually blue, though white-flowered forms have been found, and in gardens rose and double-flowered varieties are also known. It differs from the nearly related *A. blanda*, which has similar thickened rhizomes, in having stalked instead of sessile involucral leaves, while the sepals of *A. blanda* are quite smooth.

*A. apennina* is a native of the eastern Mediterranean region, growing in woods in Serbia, Macedonia and Bulgaria. In our own country it is better planted in the light shade of deciduous trees or bushes in soil containing a considerable quantity of leaf-mould than elsewhere. There it is perfectly hardy and will flower in early April, making a carpet with the flowers five or six inches above the soil, each on a stalk with three involucral leaves some distance below the flower, rising from among the prettily cut basal foliage.

## 203. CLEMATIS MACROPETALA.

*Award of Garden Merit, June 11, 1934.*

The genus *Clematis* shows many well-marked groups among its numerous widely-distributed species, so that botanists have from time to time proposed several different genera for them which we now include under the one. The differences in essentials are not great enough to maintain the divisions and in many instances when brought

\* The notes on the first hundred plants to receive the Award of Garden Merit have been collected from our JOURNAL, vols. 47 to 53, and published as a pamphlet, price 1s. For subsequent notes see vol. 54, pp. 218 and 423; 55, pp. 121 and 276; 56, pp. 80 and 245; 57, pp. 65 and 354; 58, pp. 171 and 400; 59, pp. 131, 308, 360, 406 and 449; 60, pp. 89 and 545; and 61, pp. 94, 138, and 225.

into cultivation species assigned to one readily cross with those assigned to another and to this we owe a great number of beautiful garden hybrids.

The section to which the name *Atragene* is often applied, well known from its European representative common in the Alps, *Clematis alpina*, is marked by the outer ranks of stamens being sterile and more or less petal-like in colouring. *C. alpina* is not restricted to the European Alps, but appears in a more or less modified form in the Pyrenees, in Finnish Lapland, the Ural and Altai Mts., Siberia, Mongolia, N. China, Japan and N. America. Nearly related species, *C. cirrhosa* and *C. balcarica*, occur in the Mediterranean region and the Himalaya, and the subject of this note, *C. macropetala*, was introduced by REGINALD FARRER from the Da-Tung Mts., where he collected seed in 1915. FARRER was apparently doubtful of the germination of the seeds he secured, for he writes of it : "*Clematis* sp. belongs to the *Atragene* group, and is of incomparable loveliness. I only know it in the ghyll of Tien-Tang, where it rambles frailly through light bushes, to the height of 2 or 3 feet, and then cascades downwards in a fall of lovely great flowers of china-blue, so filled with petaloid processes that they seem as double as any production of the garden. The seed, also, is very uncertain, not having been ripe when I left, and the Lord Abbot of Tien-Tang having failed to fulfil his promise of sending us some more." One must seek for Tien-Tang, on the map of Kansu about 37° N. and 100° E., at an altitude of about 10,000 feet, where the Da-Tung river skirts the great mountains on its way to join the Si-ning river.

One may well leave FARRER's picture of *C. macropetala* without any attempt to touch it up. It both depicts the plants and suggests the best way to grow it. His fears with regard to the seed were unfounded and the greater part of the plants of it in cultivation we owe to his gathering. It is hardy, given the protection indicated, flowers in June rather later than *C. alpina*, and needs only a well drained but moist soil. It is good also in a cool house, where the first plants of FARRER's collecting flowered at Wisley. *C. macropetala* had been introduced a year or two earlier than FARRER's collecting by PURDOM, when collecting for Messrs. VEITCH, in whose Coombe Wood Nursery it flowered in 1912, and this is the first time it flowered in European gardens, although it had been long known to botanists. D'INCARVILLE collected it north of Pekin in 1742 and LEDEBOUR named it from Siberian specimens in 1829. It was figured in the Botanical Magazine t. 9142.

#### 204. PRUNUS SERRULATA LONGIPES.

*Award of Garden Merit, June 19, 1933.*

The flowering season of the Japanese Cherries is an extended one. In one form or another they may be had in flower from October until mid-May or in late seasons even longer, although the bulk comes in



April and May. *Prunus serrulata longipes*, which is also called Okumiyako, is one of the late-flowering varieties, at its best at the beginning of May. It has large double flowers about two inches across, perfectly white when fully out, arranged in drooping corymbs of three to six flowers on a rather short common stalk, but with long stalks to the individual flowers (sometimes nearly 6 inches long, but usually about 4 inches), and it therefore well merits the name *longipes*. The petals are toothed at the margins. The leaves have long pointed teeth and are greenish, not bronze, as they unfold. These characters with the brownish-grey branches distinguish this variety from others somewhat similar.

The tree is a fairly vigorous one with ascending branches, and therefore makes a good bush as well as a fine standard. Mr. COLLINGWOOD INGRAM points out that this variety grows well on the native Japanese stock, though it thrives at first on *Prunus Avism*, which, speaking generally, is the best stock for Japanese Cherries.

## TRIAL OF LAWN AND GARDEN SPRINKLERS, 1936.

MAKERS of Lawn and Garden Sprinklers were invited to send their appliances to Wisley for trial in 1936 and over fifty were received. They were adjudicated upon on April 29, 1936, and the list of Awards made is shown below.

The judges, Messrs. D. Campbell (Superintendent, Regent's Park), F. J. Chittenden, F.L.S., V.M.H. (Royal Horticultural Society), Dr. Denham (Director, Institute of Agricultural Engineering, Oxford), Messrs. Hepburn (Superintendent, Hampton Court Gardens), Robins (Market Grower, Heston), and F. A. Secrett, F.L.S. (Market Grower, Walton-on-Thames), recommended no awards to appliances that were capable of dealing with small areas only which can be adequately and economically watered by means of a water-can, nor did they recommend separate awards for appliances which differed mainly in the height of the standard. Height can well be adjusted as a rule where such adjustment is required by means of a telescopic stand.

The particular purpose for which the appliance received the award is indicated below, together with its name and that of the person or firm who sent it to the trial.

*Garden and Lawn Sprinklers.*

## OSCILLATING LINE SPRAYERS.

*Award of Merit.*

Wizard Oscillator: for general use, including market gardens. Sent by Messrs. British Overhead Irrigation Ltd., Upper Halliford, Middlesex.

*Highly Commended.*

Kinnell Oscillating Spray Line: for general use, including market gardens. Sent by Messrs. Chas. P. Kinnell & Co., Ltd., 65 Southwark Street, London, S.E. 1.

## STILL LINE SPRAYERS.

*Award of Merit.*

Flexible Water-square on Swivel Ball Carriages: for use on lawns. Sent by Messrs. British Overhead Irrigation Ltd., Upper Halliford, Middlesex.

## ROTARY POINT SPRAYERS.

*Award of Merit.*

No. 4 Gay Rotary Sprinkler: for general use. Sent by Mr. E. Currie Brickhill, Australia House, Strand, London, W.C.

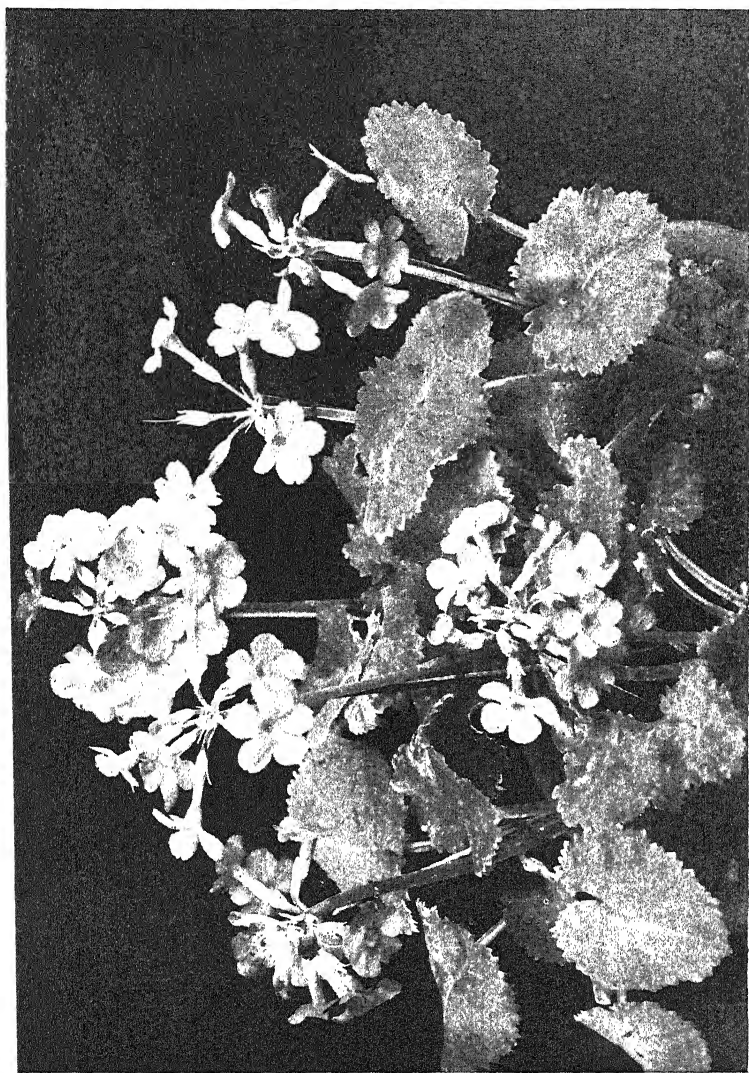


FIG. 67.—*PRIMULA ROTUNDIFOLIA*.  
(p. 259)

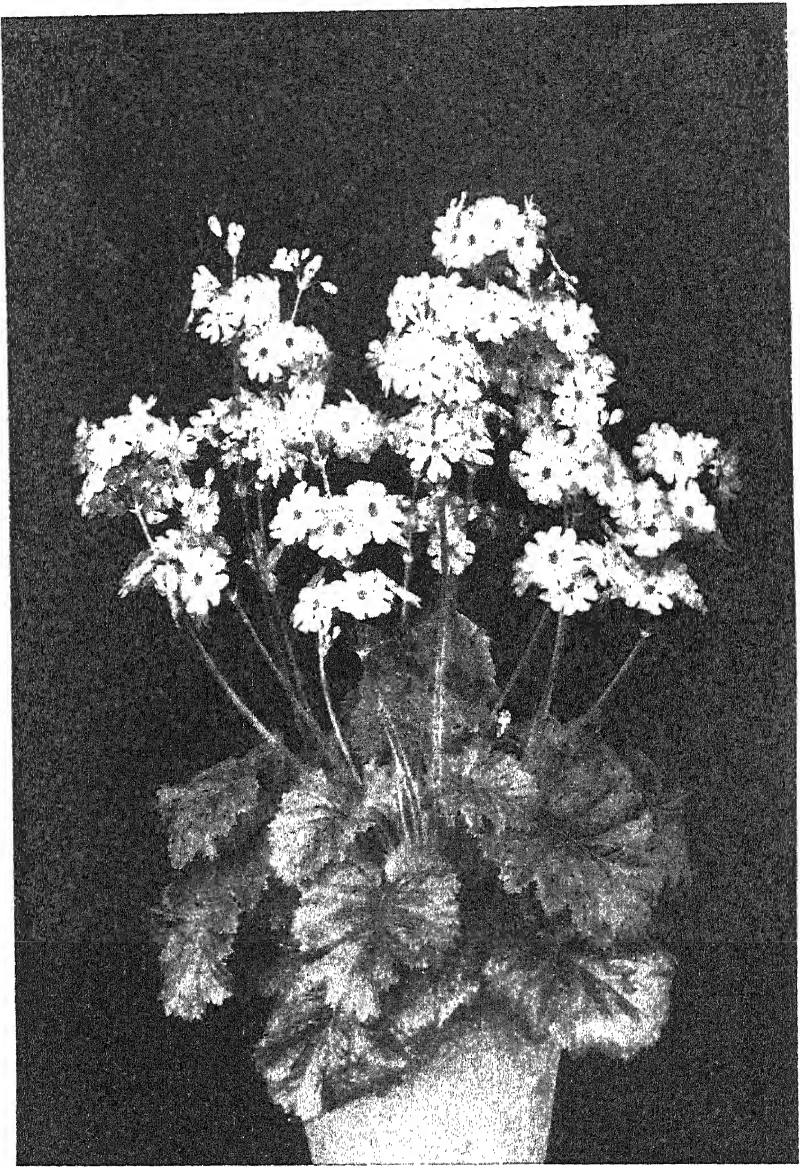


FIG. 68.—PRIMULA MALACOIDES 'DUCHESS OF KENT.'  
(p. 260)

[To face p. 269.

*Highly Commended.*

Majestic Sprinkler : for lawns and tennis courts. Sent by Toll Lawn Dressings Ltd., Buxted, Sussex.

Mysto Patent Revolving and Reversing Lawn Sprinkler : for lawns and general use. Sent by Messrs. W. T. French & Son, Browning Street, Ladywood, Birmingham.

Square-spray Lawn Sprinkler : for general use. Sent by Messrs. Lloyds & Co. (Letchworth) Ltd., Letchworth, Herts.

Twingler : for general use. Sent by F. A. Hannibal, c/o Messrs. Slaymaker & Co., Ltd., 25 Catherine Street, Covent Garden, London, W.C. 2.

*Commended.*

Orr Patent Sprinkler : for lawns and golf greens. Sent by Toll Lawn Dressings Ltd., Buxted, Sussex.

## OSCILLATING POINT SPRAYER.

*Award of Merit.*

Wizard Waterfan : for general garden use. Sent by Messrs. British Overhead Irrigation Ltd., Upper Halliford, Middlesex.

## STATIONARY POINT SPRAYER.

*Award of Merit.*

Lawn Sprinkler : for general garden use. Sent by The Four Oaks Spraying Co., Four Oaks, Sutton Coldfield, Nr. Birmingham.

## HOSE ATTACHMENT NOZZLE.

*Commended.*

Mysto Patent Flexible Fan Sprinkler : for hand use (hose attachment). Sent by Messrs. W. T. French & Son, Browning Street, Ladywood, Birmingham.

## NOZZLE FOR LINE SPRAYER.

*Commended.*

Mysto Portable Tension Sprinkler : for use on pipe line for garden or lawn at 18 feet apart—not singly. Sent by Messrs. W. T. French & Son, Browning Street, Ladywood, Birmingham.

## BOOK REVIEWS.

"Rhododendrons and Azaleas: their Origin, Cultivation and Development." By C. G. Bowers. La. 8vo. xiv + 549 pp. (Macmillan, New York.) £2.

At last a book about Rhododendrons, written by an American and for Americans, has appeared and will no doubt be of great value on the other side of the water. The difference of climatic conditions is, however, so great that, although it contains some interesting information on their cultivation, it will be of little use to the European horticulturist.

I must say I am glad that my garden is in the British Isles and not in a country where the only Rhododendrons that are really recommended for growing in the Eastern States are those which have been rejected by the Rhododendron Association as completely out of date and no longer worthy of cultivation.

But if neither the more attractive species of true Rhododendron nor the better hybrids which have been raised from them are of garden value in the greater part of America, Azaleas certainly come into their own. A great many of the Azalea hybrids raised in this country owe much of their beauty to the American blood which they contain, and these are obviously at home over there. Curiously enough, some of the deciduous Japanese Azaleas, such as *Rhododendron Schlippenbachii* and *R. pentaphyllum*, which start early into growth in England and therefore require sheltered positions, have proved themselves completely hardy in the land where winter tarries and spring comes with a rush. In this section, at any rate, the American garden can vie with the one in this country.

The author, who obviously writes as a scientist, is rather apt to repeat himself in order to make his meaning clear to the layman; for instance, he reiterates time and again the necessity of using lime-free soil and complicates the matter with  $p_H$  values. Here, at any rate, the Rhododendrons are kindly plants and will grow in any soil which a simple chemical test proves not to be alkaline.

The extraordinary care required to shelter Rhododendrons, where even the more or less hardy ones may be killed in certain positions if a freezing wind reaches them, and the necessity of watering the plants in the autumn so as to enable them to stand the long freezing at the roots, is another indication of the severity of the climate. But the suggestions for shelter seem rather crude—clipped hedges of White Pine, Douglas Fir or Norway Spruce would hardly be considered gardening in this country, whilst some of the non-ericaceous woody plants recommended for planting amongst them in order to keep the leaves round their roots, such as Mahonias and Cotoneasters, would need severely keeping in check in England.

The really interesting portion of the book deals with the use of manures and the description of their composition. That Rhododendrons like chemical manures I have proved at Exbury by using one of the American preparations for the last two years. Later, in the same chapter, the author describes how *R. ponticum* was raised from seed in pure sand irrigated with water in which all necessary plant foods had been introduced in liquid solution, and that it reached a height of 5 feet and flowered in two years. This is a remarkable performance and our American friends are well ahead of us in this item of Rhododendron growing, but the care required to grow on the seedlings in the open is very much greater than in our lucky climate, whilst the trouble needed for hybridization shows the American bee to be much more intelligent than the European one.

The latter part of the book consists mainly of a condensation of material copied from various Rhododendron books which have appeared in this country. At the beginning the author tells us that he has only departed from the Rhododendron Society's nomenclature in two instances, one with *Rhododendron Kaempferi* and the other with *R. poukhanense*. In both these cases I agree with him, and in fact considerable surprise was expressed in England when an American, who very kindly wrote the Azalea section of the Rhododendron Society's book, included *Kaempferi* as a form of *R. obtusum*. But an American may be allowed to criticize an American.

It is a pity, when he has used so much material that was contained in the early Rhododendron Society and Rhododendron Association publications, that the author did not refer back to these Societies in order to obtain the latest information; for instance, *R. Macabeumum* is given as not in cultivation, whereas plants several feet high are growing in our gardens raised from Kingdon Ward

seed. Also, all the stars and letters denoting hardiness and garden value have been copied from old editions, and these are varied considerably in the newer editions of the Rhododendron Association's Year Book. No doubt every assistance would have been given him if only he had corresponded with these two bodies instead of quoting from their works without their knowledge.

The coloured illustrations are unfortunately extremely poor and very little resemblance to the plants they are supposed to represent can be detected, unless of course in the American climate they grow so differently. The black and white are, however, better, and *R. catawbiense* in the wood gives a good idea of the character of the plant.

Some of the information in the appendices is interesting as giving lists of Rhododendrons growing in various parts of America, including the Western States.

On the whole, the author has taken an immense amount of trouble to produce a work on plants in which he is obviously much interested, and it is a pity that so little of it is either new or of value over here.

L. DE ROTHSCHILD.

"The Gardener's Handbook: a Practical and Handy Manual of Seeds, Bulbs, Plants, and Flowers for the Amateur and Professional Gardener, Seedsman and Florist." By T. C. Holmes and R. E. Hay. v + 99 pp. 32mo. (Country Life, London, 1936.) 2s. 6d.

The intention of this small book was good, but we cannot commend the execution. The authors have fallen into most of the pitfalls that await the makers of tabloid literature, and the spelling of plant names is often most original.

"Natural Rock Gardening." By B. H. B. Symons-Jeune. Ed. 2. 8vo. xvi + 160 pp. (Country Life, London, 1936.) 10s. 6d.

The original issue of this book was reviewed on its appearance. The second edition is a reprint of the first without alteration and with the addition of a chapter on "Proportion"—a very necessary matter for consideration where a pleasing rock-garden is in contemplation. Incidentally the construction of a rock garden on a flat, or a nearly flat, site is dealt with in this chapter by reference to an example which is illustrated.

"The Garden Dictionary: an Encyclopedia of Practical Horticulture, Garden Management and Landscape Design." Ed. by Norman Taylor. La. 8vo. viii + 888 pp. (Houghton Mifflin Co., Boston, 1936.) £2.

An alphabetical list of garden plants with notes on the genera and short pithy descriptions of the species. Over seventeen hundred genera are dealt with. Under each genus are given some particulars as to its size, the general habit, the family to which it belongs, the origin of the name, the cultural peculiarities, methods of propagation, and distribution. The notes on species include a useful indication of the climatic zone of N. America (for which the book is written) in which the plant may be expected to succeed.

Important crops, like Celery, and processes, like Pruning, are dealt with at length, but without unnecessary verbiage.

References are easy to follow and the contents of the book are made more accessible by a thumb index.

As is to be expected, the relative importance of certain garden groups in this country and N. America renders the treatment different from what may be expected and required in a book intended for England, and many of the cultural directions would not find proper application here, but the book appears to be well thought out and well produced. The illustrations are numerous and, though sometimes crude, are helpful.

"The Modern Garden." By G. C. Taylor. La. 8vo. 224 pp. (Country Life, London, 1936.) 15s. net.

This is a book of illustrations of gardens and garden flowers, but mainly of flowers in gardens, which have appeared from time to time in Country Life with brief notes below each, as, e.g., "The noble Himalayan *Lilium giganteum* in a picturesque setting. The groundwork planting consists of azaleas and species rhododendrons."

It is a pity that the gardens where the photographs were made are not named. An idea might then have been obtained of the possibilities in one's own neighbourhood, and interest in the pictures would have been increased.

## NOTES AND ABSTRACTS.

*Arisaema Pradhanii* C. E. C. Fischer (*Bot. Mag.*, t. 9425; Feb. 1936).—A new tuberous herb from the eastern Himalayas in Sikkim with a large, broad, chocolate-purple spathe with yellowish green reticulations; spadix dark purple; a long filiform appendix arises from the apex of both the male and female inflorescences; a cool greenhouse plant about 2 feet high.—*M. S.*

*Cupressus lusitanica* Mill. By W. Dallimore (*Bot. Mag.*, t. 9434; Feb. 1936).—A variable species from the mountains of Mexico and Guatemala, closely allied to *C. arizonica*, up to about 80 feet in height, but usually about half that height; a rapid grower, with glaucous or sage-green foliage, hardy in the milder parts of Great Britain.—*M. S.*

*Delphinium consolida* Zinn. subsp. *paniculatum* (Hort.) Turrill. By W. B. Turrill (*Bot. Mag.*, t. 9435; Feb. 1936).—A hardy annual from the Balkan Peninsula with much and loosely branched panicles of light violet flowers, finely divided leaves, and dark green terete stems.—*M. S.*

**Erythronium, The Genus: a taxonomic and distributional study of the western North American species.** By E. I. Applegate. (*Madroño*, vol. iii, no. 2, pp. 58-113; April 1935).—This revision of the *Erythroniums* of the Rocky Mountains and westward (*i.e.* of California, Oregon, Washington, Idaho, Montana, Colorado, Utah, south-west Alberta and south British Columbia) is the result of many years' study of these plants, growing wild throughout this area and under cultivation, as well as of the literature and herbarium material. The author distinguishes fifteen species belonging to two sections: the *Concolorae* with unmottled bright yellow-green leaves and white, creamy-white or golden-yellow flowers, essentially a high mountain group and consisting of *E. purpurascens*, *E. klamathense*, *E. nudopetalum*, *E. tuolumnense*, *E. grandiflorum*, *E. idahoense* and *E. montanum*; the *Pardalinae* with mottled leaves and white pink on lavender (but not golden-yellow) flowers, essentially a group of the foothills and lowlands and consisting of *E. Howellii*, *E. citrinum*, *E. Hendersonii*, *E. revolutum*, *E. oregonum*, *E. californicum*, *E. Helenae* (from Mt. St. Helena, California), and *E. multi-scapoideum* (syn. *E. Hartwegii*). All are described from living plants and their history and distribution given in detail. Study of type-specimens and visits to type-localities have cleared up many long-standing difficulties of interpretation. *E. giganteum* Lindley (1835) proves synonymous with *E. grandiflorum* Pursh (1814), thus leaving without a valid name the beautiful white- or creamy-flowered mottled-leaved plant (figured in *Bot. Mag.*, t. 5714) of Oregon, Washington and British Columbia which has hitherto been erroneously known as '*E. giganteum*' or '*E. grandiflorum albiflorum*' (as in *JOURNAL R.H.S.*, 50, 278, fig. 81); it is accordingly described anew as *E. oregonum*, the name '*Oregon*' at one time covering all the territory occupied by the plant. Other new species distinguished by the author are *E. klamathense*, *E. nudopetalum*, *E. tuolumnense* and *E. Helenae*.  
—*W. T. S.*

*Lachenalia mutabilis* Sweet. By J. Hutchinson (*Bot. Mag.*, t. 9433; Feb. 1936).—A bulbous herb with beautiful, though small, sky-blue flowers which turn brownish-yellow on maturing; leaves two, bright green, and lanceolate. A native of S. Africa, this plant can be grown in this country in a cool greenhouse.  
—*M. S.*





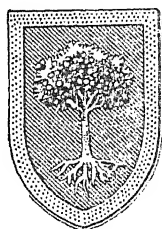


FIG. 69.—ASSAM HIMALAYA AT THE TREE LINE. SOUTH SIDE.

[To face p. 273.

# JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

Vol. LXI



Part 7

July 1936

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## ACROSS SOUTHERN TIBET.

By Captain F. KINGDON WARD.

[Read March 10, 1936 ; F. C. STERN, Esq., F.L.S., in the Chair.]

FOR three hundred miles from the eastern border of Bhutan to the bend of the Tsangpo the Assam Himalaya is virgin territory to the plant hunter. In 1935 I made up my mind to cross the Assam Himalaya, and if possible to extend my explorations through southern Tibet to the Tsangpo. There is only one possible route, most of the foothills being protected by a screen of unreliable backward tribes who do not welcome strangers. Leaving the Assam plain at the end of April, with twenty-five coolie loads, we began the ascent, passing gradually from hill jungle to warm temperate rain forest, and finally to cool temperate rain forest. One of the most conspicuous trees in the hill jungle is the big bluish-leaved *Actinodaphne obovata*. Species of *Capparis* were in flower, and presently we came to a moderate-sized tree which was a mass of snow-white flowers—*Styrax Hookeri*.

On the fourth day we climbed steadily, finally camping at 9,000 feet, not far below the pass. The forest consisted of Oaks (*Quercus lamellosa*, *Q. pachyphylla*), Magnolias (*M. Campbellii*, *Michelia excelsa*, *Manglietia insignis*), *Illicium Griffithii*, Maples, Birches, Laurels, Rhododendrons (*R. Griffithianum*, *R. arboreum*) and many other trees. At 9,000 feet I saw a fine tree of *Osmanthus suavis* in full bloom, and also *Stachyurus himalaicus*, with long hanging ropes of pinkish flowers. The rainfall here is 150–200 inches. Next day we climbed to the Pankim La (10,000 feet), and were over the first range. On the way up to the

pass I noticed the epiphytic *Rhododendron Lindleyi* in splendid bloom, and the pretty yellow-flowered *Pentapterygium flavum*. On the pass itself were thickets of *Rhododendron pankimense* with purple flowers, and *Berberis insignis*. After descending a thousand feet we found ourselves in a new world. The dense forest of the southern slopes gave place to open park-like forests of blue Pine and Oak. We descended to the first hill village, at 6,500 feet, and found permanent cultivation. The rainfall here is about 60 inches, and there are sharp frosts in winter. I found *Primula mollis* and *P. denticulata* here.

Continuing northwards leisurely over the mountains, I crossed the Manda La at 11,000 feet, and found the ranges well wooded, though the intervening valleys are dry and hot. *Primula filipes* was abundant in damp gullies, with a pretty little species of Mazus. On the Manda La were forests of Tsuga, and numerous Rhododendrons, including the epiphytic yellow-flowered *Rhododendron megeratum*. At Dirang Dzong, under 6,000 feet, the lowest point reached since leaving the Assam plain, I saw masses of *Dendrobium nobile* and *D. fimbriatum* in flower. On the sunny banks *Gerbera piloselloides* was common.

The next range we crossed was higher—14,000 feet—and at the top were forests of tree Rhododendrons such as *Rhododendron Wightii* and *R. Falconeri*, besides moors covered with the rosy-flowered dwarf *R. anthopogon*. The monsoon had broken (this was in early June) and for a week we were crossing high passes enveloped in mist and snow. Rhododendrons were flowering all round and Alpine Primulas also, notably the yellow-flowered silvery-leaved *P. Barnardoana*, and a bright yellow-flowered species, *P. strumosa*. The alpine slopes were mauve with dwarf forms of *P. atrodentata*. At last we reached the village of Mago at the foot of the main Himalayan range.

Starting again on June 12, we crossed on consecutive days two passes of over 17,000 feet, and on June 15 emerged at last on the dry Tibetan plateau, steeped in sunshine. On the Tulung La (17,250 feet) I found a clump of the rare *Veronica lanuginosa*, its azure-blue flowers borne amongst silver silken-haired leaves. We were now in a land where there is no forest, though there are trees in the villages. All crops are irrigated; and along the irrigation channels grew a charming 'Sibirica' Iris with bicolored flowers. On the dry cliffs the yellow-flowered *Dicranostigma lactucoides* was in bloom, and here also I saw an unknown species of some Cruciferous genus.

Following a river called the Loro-chu eastwards, at over 11,000 feet altitude, we crossed two high ranges of mountains at over 16,000 feet, finding many fine plants, and descended into the wet valley of Tsari. The meadows were yellow with Primulas and under the Rhododendron bushes grew masses of *Adonis brevistyla*. In the Tsari valley I found the almost unknown *Meconopsis argemonantha*, a dwarf species with pure white flowers, and on the high ranges above the valley, *M. bella*, hitherto known from Nepal to Bhutan, but not from Tibet. Abundant also was *M. paniculata*, also recorded from Tibet for the

first time, and finally there was *M. betonicifolia*. Crossing two more passes, each about 15,000 feet high, I reached the Tsangpo in the middle of July. On the way I found two plants of garden worth, a half-shrubby *Dracocephalum* with magnificent sapphire-blue flowers—*Dracocephalum Hemsleyanum*—and a big yellow-flowered *Sedum*. In the sub-alpine region, especially around cultivation, at 12,000 feet or higher, were many good plants in July, which is the height of the rainy season in Tibet, e.g. *Androsaces*, *Adenophoras*, and *Codonopsis*.

In the Tsangpo valley, the blue-flowered *Onosma Waddellii* was in bloom—it grows everywhere in sandy soil, also the prickly thistle-like *Morina Coulteriana* with lemon-yellow flowers. Here I met with *Primula Florindae* again. Continuing eastwards to Tsela Dzong, I crossed the Temo pass, where a fine *Codonopsis* was coming out, and reached Tongkyuk at the end of the month. On August 1 I started out to cross the great snowy range north of Tongkyuk, and after traversing the difficult Sobhé La, reached the Yigrong river. For eighteen days I followed this fine river through its stupendous gorges. The cliffs were covered with *Pinus excelsa*, *P. tabulaeformis*, and *Tsuga*, besides *Rhododendrons*. There were masses of *Lilium Wardii*, species of *Allium*, and, in fruit, a violet *Iris*, probably *Iris goniocarpa*. After crossing two more high passes I reached the Lhasa-China high road, and two days later the town of Gyamda, east of Lhasa. *Salvia Wardii* was in flower here, and the tall yellow-flowered *Incarvillea*, collected in 1924, in fruit. In September I turned south again, crossing a high range and reaching the Tsangpo. Alliums, *Cyananthus*, *Gentians* and other autumn-flowering plants were now conspicuous; also *Saxifrages*, *Codonopsis*, *Adenophora*, and great numbers of *Compositae* and *Labiatae*. Returning through Tsari I collected seed of *Adonis brevistyla* and *Primula Barnardoana*, and found what looks like a new species of *Gentian* in flower. Crossing the next range, there were clumps of *Aconitum*, the flowers an unusual shade of blue, *Primula pulchelloides* still in bloom, *Cyananthus lobatus*, large form, and *C. Wardii*, and the lovely *Gentiana Waltonii*. Returning to the Loro-chu, I found the dry valley very burnt up; here I collected seed of the 'Sibirica' *Iris*.

It was now the end of September, and as I had to be back in Assam by the end of October it was time to be thinking of leaving Tibet. The weather was fine but cold, and the wind had begun to blow. Crossing the main Himalayan range, early in October, I experienced 16° of frost inside my double fly tent. On the Himalayan side *Gentiana gilvostriata* was in bloom, and many shrubs—species of *Lonicera* and *Cotoneaster* chiefly—were covered with scarlet or orange berries. We reached Mago on October 5, and I started to collect *Rhododendron* seed. There were plenty of flowers here, notably *Gentiana sino-ornata*, pale-blue form. After two days we resumed our march to the south, but following a different route from the one taken in June. This took us over a pass of 15,000 feet, and down into a wooded valley filled with many kinds of *Rhododendrons*. I collected

seeds on the march. Crossing another pass, the Poshing La, in a thick freezing-cold mist, we had a most unpleasant descent. A large-flowered, but otherwise dwarf, *Aconitum* was in flower, and a *Meconopsis*, which I hoped might be *M. argemonantha*, was in seed, also a species of *Omphalogramma*, the first I had seen. Camping on an open grassy shoulder, amidst Fir trees, *Rhododendrons* and *Clethra Delavayi*, we looked across the deep valley in which Dirang Dzong is situated, to the Manda La, and thence to the plains of India, still a long way off. Next morning we started down through forests of *Rhododendrons*, where I found a *Primula* in fruit; evidently it was closely allied to *Primula Normaniana*, but the leaves were different. A long march brought us to a village after dark. There were species of *Clematis* in flower in the warm valley, and I collected *Rhododendron Buthii* in fruit—possibly a hardy form.

On October 12, after another long march, we reached Dirang Dzong, where I stayed three days. From here to the last hill village over the Manda La and two other passes took only three days. A rather pretty *Pleione* was in flower on the rocks—nowhere did I see it growing on trees. At Shergaon I found it was impossible to cross the Pankim La, so once more we turned eastwards, in order to reach a lower pass. On the second day we reached the large village of Rupa, near a limestone gorge. *Cupressus torulosa* grew here, and on the limestone cliffs masses of a pretty slipper Orchid which may be a new form of *C. Fairrieanum*. I sent living plants home. The 'slipper' and upper petal may be described as honey yellow, the latter with purple stripes. The lateral petals are curled back. The leaves are not blotched or spotted. On the fourth day we left the Pine-Oak forest country behind us, and once more entered the jungle. We had now to cross a pass 6,000 feet high, which we did without any trouble. There were several *Begonias* on the rocks, one with immense leaves flat on the ground, and yellow flowers. Species of *Pentapterygium* and herbaceous *Acanthaceae* were numerous, also species of *Impatiens*. *Wightia gigantea*, a fair-sized tree, often epiphytic but not here, was in bloom, having lost all its leaves. Oaks abounded, and I collected a *Podocarpus*, like *Podocarpus latifolia*. We reached the Bhareli river on October 27, and had a long wet march by a rough path through the thick jungle. Wind and rain made things unpleasant, and leeches were a menace; but next day we reached the dirt motor road and crossed once more into administered territory. We were on the very edge of the Assam plain, or rather on the saucer-like lip. That night we camped within ten miles of the first British outpost. A white-flowered *Bauhinia* was in bloom here, but no other trees. Next day we reached the outpost at noon, and four days later Tezpur on the Brahmaputra, whence we had set out just six months previously. I had covered about 1,500 miles in that time, crossed many high passes, and collected a number of new plants.



FIG. 70.—*ABIES* WITH UNDERGROWTH OF *ARUNDINARIA* IN THE  
ASSAM HIMALAYA.

[To face p. 276.



FIG. 71.—ASSAM HIMALAYA. MEADOW AND MIXED FOREST.



## THE CENTENARY OF LOUDON'S "ARBORETUM."

By W. ROBERTS, F.R.H.S.

MANY authors have written many books, and some have accomplished literary tasks which can only be adequately described as gigantic, almost indeed as superhuman. The martyr's crown would seem to have been the fate of many voluminous authors, and not a few of them died either in prison or in the workhouse. Ever since authorship became a profession it has been, as ISAAC DISRAELI long ago demonstrated, a fruitful source of calamities and misfortunes. Men—their minds "never free from studie" and their bodies "seldom void of toyle"—have devoted their lives to compiling books which no one wanted and many of which never even got into print. On the other hand, a number of books of the highest reference value have been successfully launched in spite of every conceivable drawback.

Three men at least stand out prominently in the writer's mind as both benefactors to their species and as martyrs to their devotion—ROBERT WATT (1774-1819), author of the *Bibliotheca Britannica*, one of the most useful books of its kind in the English language; JEAN MARIE QUÉRARD (1797-1865) author of *La France Littéraire*, in twelve volumes in course of publication from 1827 to 1864; and JOHN CLAUDIUS LOUDON (1783-1843), whose name and whose books will need no introduction to the readers of these pages. WATT and QUÉRARD died practically penniless; whilst LOUDON left considerable liabilities mostly due to his printers, but with assets which helped to balance the ledgers. Not one of these books has been superseded, and no one has attempted to deal so fully with their respective subjects. It is true that what was possible for one man to do a century ago is not possible to-day.

The careers of J. C. LOUDON and of his accomplished and devoted helpmate JANE LOUDON (1807-58) have been so fully dealt with in so many places that it is not necessary to go over the ground again. Their works, and more particularly those of the husband, among many others, the *Encyclopædia of Gardening*, 1822, and the *Arboretum et Fruticetum Britannicum*, 1835-8, will remain for all time a testimony to their industry and abilities. The more frequently one examines the works of J. C. LOUDON the more often is one impressed with their stupendous comprehensiveness, and with their author's complete grasp of his subject, which might well have been divided among many experts.

The centenary of the publication of the *Arboretum*, which appeared in sixty-eight parts from January 1835 to July 1838, forming eight thick volumes (of which four consisted of illustrations), may fittingly and deservedly be celebrated any time within the next two years, and

I am glad to be able to pay a tribute, however small, to what was and must always remain a great undertaking. The Arboretum was in LOUDON's mind in 1830, and about 1834 some three thousand printed lists—or Questionnaires—of trees and shrubs were put into circulation; and answers to these or other information relating to them were received from about sixteen hundred correspondents in Great Britain and abroad—their names are given in the first volume of the Arboretum.

It is not easy to-day to realize the difficulties which hampered LOUDON's undertaking. There was no penny post\*—a letter to Scotland would cost about a shilling and be some three days in getting to its destination—the few railways were negligible, in fact there was nothing to expedite the labour of inquiry, and owners of large estates were so self-centred that inquiries such as LOUDON's might be regarded with a certain amount of hostility. On the other hand, LOUDON was known all over Europe as an eminent author on all subjects relating to gardening and agriculture, and definite applications from him for information could not very well be ignored.

The letters which he received in reply to his Questionnaires in connexion with the Arboretum were carefully preserved with their envelopes by LOUDON, and a large selection would seem to have been presented by him in 1837 to his friend Miss JANE JUKES of 15 George Street, St. Paul's, Birmingham, who very neatly mounted them in a quarto Album, and added at the end a number of obituary notices of LOUDON. The usual books of reference do not mention her, but an application to Mr. H. M. CASHMORE, the City Librarian of Birmingham, has brought me all the information I require, and I should like to be allowed to express my thanks to Mr. CASHMORE for his courtesy. A long obituary notice of Miss JUKES appeared in the Birmingham Morning News of August 12, 1873, which may be briefly summarized thus: JANE JUKES was the youngest child of JOHN JUKES, of Easy Row (he died in 1819), the eminent button manufacturer of Birmingham; she was born in 1791; at an early age she became interested in physical science, was a keen geologist and formed a fine collection of fossils and minerals; she was an ardent Liberal in politics and religion and accepted the teaching of WALLACE, DARWIN and HUXLEY "with a decision almost amounting to enthusiasm, and looked to the social effects of that teaching for the amelioration and ultimate well-being of the human race." She was in her eighty-second year at the time of her death. An account of her brother, JOSEPH BEETE JUKES (1811-69), also a celebrated geologist, appears in the Dictionary of National Biography.

Of her friendship—evidently an intimate one—with the LOUDONS

\* LOUDON made an effort to get his circulars passed free through the post. He appealed to the autocrat of the Post Office, Sir FRANCIS FREELING, but FREELING wrote from the G.P.O., November 17, 1834: "I very much regret that I cannot comply with your wishes to circulate some hundreds of your prospectuses free of the rate of Postage. It is a case in which unfortunately I cannot indulge any personal inclination."

we know very little. No doubt she treasured these letters as long as she lived ; but of the wanderings of this interesting Album during the past sixty years or so, there is nothing in it to indicate : all I can say is that I bought it from Messrs. DOBELL, the booksellers, some few years ago.

As a mere collection of autograph letters and signatures of eminent men of the period the volume is full of interest. The first in order is curiously enough one from Sir ROBERT PEEL, for it was to PEEL's influence in March 1846 that Mrs. LOUDON was granted an annuity of £100, in recognition of her late husband's writings on national science. The letter is entirely holograph and is dated from Whitehall, July 6 [? 1832]. The envelope bears the stamp of the Strand Post Office, Peel's crest and motto, "Industria," in red sealing-wax, the initials "R P" in the lower left-hand corner and is addressed "J. C. LOUDON, Esqr., Bayswater." It is a very amiable letter and is worth quoting in full :

"SIR,—You are perfectly welcome to see the Mulberry Tree in my garden whenever it may suit you and to have a drawing of it taken, if on inspection you shall consider it worthy of it.

"I have understood that about fifty years since the Tree was of the same size as at present and more flourishing. Its age is therefore probably considerable and it is now beginning slightly to fail at the top.

"The ground on which it stands could not I apprehend have been part of the four acres appropriated to the Planting of Mulberry Trees in the year 1609—as the Plans of the old Palace and adjacent ground indicate no such vacant space near the River.

I am, Sir,

Your obedient Servant,

ROBERT PEEL.

[P.S.] "My servant will show you a plan of the Palace, etc., etc., made in the year 1680."

Nearly all the letters were franked by the titled and other persons who sent them, and practically all are holograph. What is more important is that the writers were as keen to give the sizes and other details of the trees on their estates as LOUDON was to receive them. Frequently one meets with a human touch, such as that in the Marquess of AILSA's letters dated Nov. 16, 1836, St. Margaret's\* : "I should be glad to show you this place whenever you happen to be passing. Mr. COLES has allowed it to get into most *horrible condition* in my absence, altho' he had as many hands as he chose to employ to keep it in order. I have parted with him in consequence. I cannot find a *really good gardener*—steady, and diligent and trustworthy." The Duke of

\* St. Margaret's was in Isleworth, by the riverside towards Twickenham. The house was pulled down some years before 1876, the Park broken up and covered with modern villas. (James Thorne, *Handbook to the Environs of London*, 1876.)

GRAFTON, writing from Wakefield Lodge, near Stony Stratford, sends his answers to the Questionnaires "filled up by the gardener of this place, a very sensible and correct man," and would have sent similar returns concerning his garden at Euston, in Suffolk, but the gardener there is "quite new to the place." In most cases the Questionnaires were filled up by the gardeners, but it is extremely interesting to notice the personal activity which each employer, however elevated, took in seeing that LOUDON got his replies. Sometimes even the gardener's name is given in full, *e.g.* Lord HOOD, writing from Whitley Abbey, December 4, 1834, states that the particulars were filled in by his gardener, Alexander Knox.

The invitations to LOUDON to visit the gardens of his correspondents are very numerous. Sir OSWALD MOSLEY, November 28, 1834, sent not only details of his own trees at Rolleston Hall, near Burton-on-Trent, but also concerning those of JOHN NEWTON LANE of King's Bromley in the same county. He also writes :

"If you happen to come into this neighbourhood, however, I hope you will call upon me, for I should have very great pleasure in shewing my Flower garden and Pleasure Grounds to one who takes such interest in the subject and who has benefited the public so much by his writings upon it as yourself. I hope you will do me the favour of inserting my name amongst the Subscribers to the Arboretum, and if I can be of any further use to you, I desire you will not hesitate to inform me."

Such letters as this must have greatly cheered LOUDON in his onerous task. These unsolicited invitations are cordial and numerous. They were perhaps not always disinterested. One of the most friendly is from Lord KING of Ockham Park, Surrey, November 24 (no year), who in 1835 married ADA AUGUSTA, only child and heiress of BYRON the poet; the handwriting is distinctly feminine and the letter may have been written by her. "It would give me great pleasure" (so the letter reads) "if you could find time to run down for a day, there being many curious trees at this place and at some others in the neighbourhood. The Portsmouth coaches pass the Lodge about 11 A.M. any day, and if you could come down by that conveyance and stop at Ockham the same night, I could show you a good deal that might interest you." This is not the only letter of Byron interest in the collection. There is also one from his widow, Lady NOEL BYRON, dated from Fordhook, June 19 (but no year). It has nothing to do with the Arboretum, but as it is of historical and LOUDON interest, it may be quoted in full: "Lady NOEL BYRON, relying on the kind interest expressed by Mr. LOUDON in the plan of a Garden School, takes the liberty of introducing Mr. CRAIG, the person selected for a Master, to Mr. LOUDON—and will feel extremely obliged by any suggestions which he may have the goodness to make with respect to arrangements for the cultivation of the land. Mr. CRAIG has not been accustomed to the direction of garden work, though he possesses some of the most important qualifications, and is very intelligent." Fordhook is presumably the house at Ealing in which FIELDING the

novelist lived till he went to LISBON in 1754, and Lady NOEL BYRON'S letter was evidently sent by hand to LOUDON. She founded an industrial school for boys at Ealing on the system of Fellenberg in 1834; and it was doubtless in connexion with this school that the letter was written.

LORD HARRINGTON, writing from Elvaston Castle, December 4, 1834, "with infinite pleasure complies with Mr. LOUDON'S request," and adds: "Should he at any time find himself in this part of England, Lord HARRINGTON will be exceedingly happy to see him at Elvaston." This letter is also in a distinctly feminine hand, and LOUDON himself has endorsed it "written by Lady HARRINGTON," who, in earlier days, was the beautiful and notorious actress, Miss FOOTE. The Earl of CARNARVON\* in his reply took that opportunity of expressing the pleasure which he felt "at reading your very able article on Highclere. Should you be at any time passing near Highclere we should feel great pleasure in receiving you there if convenient to you." Much more intimate than any of these is the letter—of which only the last page is preserved in this Album—from GEORGE, second Earl of MOUNTNORRIS, afterwards Viscount VALENTIA (1769-1844), who had a famous place at Ardley, near Bewdley, and who is commemorated in the genus *Anneslea*. "I shall feel highly gratified" (he writes) "by receiving you and Mrs. LOUDON here should anything again bring you into this neighbourhood, but I hope you will in that case make it your headquarters and not Dudley. My collection has greatly increased since I had the pleasure of seeing you, chiefly by importation, and I have reason to hope for many additions this spring. I have also extended my demesne, partly in consequence of your flattering observation that this place wanted nothing but money to make it one of the finest in England. You did not however see the richest of my scenery, which lies on the other side of the river Severn."

The Duke of DEVONSHIRE, writing from Chatsworth (October 9, 1834), gives permission to LOUDON'S draughtsman to sketch, and continues: "I am very glad that you are undertaking a work so interesting as the Arboretum Britannicum is sure to become in your hands." Quite a large number of the replies included orders for the Arboretum to be delivered as it came out in parts; in one or two cases there is an undertaking to take one part without binding the subscriber to take the others. But LOUDON'S work was so well known to be thorough that there was no necessity for such caution. Sometimes he drew a "blank." Many of his correspondents, either directly or through their gardeners, reported that there was nothing to merit special mention in his publication. One letter is addressed not to

\* The letter was sent by hand and not through the post; it is merely dated "Saturday, Grov. Sq." Miss JUKES assumed it to be by the second Earl, who died April 16, 1833, but it must be by his son, the third Earl, for these replies are mostly dated—where they are dated at all—1834 or later. The article to which the Earl refers appeared in the *Gardener's Magazine* of June 1834 (pp. 245-249), and thus leaves no possible doubt that the letter was written by the third Earl, who was a playwright, a poet, and who wrote a book entitled *Portugal and Galicia*.

LOUDON but to his publishers, Messrs. LONGMAN. It is from the Rev. SYDNEY SMITH, and one could hardly expect a conventional letter from so caustic a wit. "Gentlemen," he writes, "Mr. LOUDON has sent me Queries for his *Arboretum Britannicum* respecting trees of 10 years old, but my garden has only been made 6 years."

The Marquess of SALISBURY (Hatfield, November 23, 1834) "presents his compliments to Mr. LOUDON and would have great pleasure in furnishing him with any information in his power, but he really does not understand how the paper he has received is to be filled up." Lord CLANWILLIAM (Gill Hall, Dromore, November 19, 1834) regrets that he cannot fill up Mr. LOUDON's paper "as he employs no scientific gardener." Sir GIFFIN WILSON (2 Stratford Place, December 23, 1834), having received back from his gardener at Wooburn House, Beaconsfield, LOUDON's Questionnaire, with the information that nothing is found in the gardens there to fall within the scope of the paper, he therefore returns it to Mr. LOUDON and wishes him success in his efforts. But the sting is in the tail of his letter: "Sir G. ventures to take this opportunity of expressing the earnest hope that the *Arboretum* might be kept free from the *indecent* political matter and offensive liberties of animadversion on private Persons scattered throughout the pages of the *Gardener's Magazine*. much to the blemish of that otherwise most agreeable and useful work." Sir GIFFIN WILSON, K.C., 1818, knighted in 1823, a Master in Chancery 1826, and Recorder of Windsor, ranks among the many once prominent men who now repose in complete oblivion.

Another letter of considerable interest may be quoted in part:—Lord COVENTRY, writing from Coventry House (November 27, 1834), and after stating that his head gardener, WILLIAM CLARKE, was preparing the details necessary, continues: "I am happy to find that a person so intelligent as yourself should hold so high an opinion of the plants and shrubs at Croome [Severn-Stoke, Worcestershire]; I have great pleasure in keeping them up in the highest perfection, and it was a great delight to me this year to receive a letter from Mr. FORBES, the Duke of BEDFORD's head gardener at Woburn, to say he had paid Croome a visit, and that my place and plants 'were an ornament to the Country'."

A journalist himself, and fully realizing the value of publicity, LOUDON wrote to his neighbour LEIGH HUNT, the intimate friend of SHELLEY, BYRON, CHARLES LAMB and many others, and one of the most prominent literary men of the time. The letter was answered, November 29, 1834, by LEIGH HUNT's son, THORNTON LEIGH HUNT (1810-73), also an able journalist: "My father has received a note from you respecting your forthcoming work, the *Arboretum Britannicum*, which he handed over to me; as it belongs more properly to a part he has entrusted me with in the increasing duties of the *London Journal*. Your note mentions an accompanying specimen of the plates of the *Arboretum Britannicum*, but it has not come to hand. If you could favour us with a sight of it we should be able

to notice the work with a better knowledge. My father desires me to present his compliments."

In going through these interesting letters of a century ago, written under circumstances and conditions which suggest a very different world from that of to-day, it is difficult to know where to stop. From Miss JUKES's index LOUDON brought into his net ten dukes, seven marquesses, forty-four earls and viscounts, three bishops, besides stars of a lesser magnitude. Many of the letters are represented in this Album only by the franked addresses, the letters being presumably used by LOUDON as "copy" for his book. Miss JUKES, in addition to the various obituary notices of J. C. LOUDON and his wife, has also added some newspaper cuttings about an incident which amused the town for a long time, and which is still occasionally met with in books of anecdotes; the story has expanded with age. Briefly it is this: LOUDON applied to the great Duke of WELLINGTON for information relative to the Duke's Beeches. When the Duke got the letter he read the signature as "C. J. LONDON," the superscription of the then Bishop of LONDON (C. J. BLOOMFIELD), instead of J. C. LOUDON; and further that instead of Beeches he read Breeches. The story goes that the Duke, thinking that the Bishop wanted the Waterloo breeches for some exhibition purposes, directed his valet to look out the article and forward it to the Bishop, with "F.M. the Duke of WELLINGTON's compliments." The Bishop's amazement when he received the parcel can be dimly imagined, and he thought that all was not quite right with the veteran warrior. The Duke, after the parcel was sent, began to think the same of the Bishop; and both took their problems to the Prime Minister (Sir ROBERT PEELE). But the mystery was soon solved by the production of the letter which caused all the commotion. The story, however, leaked out, and it was far too good a bit of "news" to be ignored by the journalists. This Album does not contain any letter from the Duke of WELLINGTON, but it does contain a franked address and the black wax seal of "C. J. LONDON," with the Post Office stamp date "De. 23" [1834].

LOUDON, in spite of physical disabilities and ill-health, successfully launched his last great undertaking. It was produced at his own cost and involved an expenditure of over £10,000, the greater part of which was owing when the work was completed. But it sold so well till the serious depression in the book trade in 1841, that only about £2,600 of the debt remained to be paid off at the end of that year. But the large proportion of the debt was not paid off solely by the sales of the Arboretum, but in part by the profits of LOUDON's other literary property, consisting of thirteen different publications, all of which were pledged in the hands of his publishers for the debt on the Arboretum. Soon after LOUDON's death and when the serious condition of his affairs became known, Professor LINDLEY presided at a meeting in the Rooms of the Horticultural Society in Regent Street "for the purpose of devising the most appropriate method of

promoting the sale of the late Mr. LOUDON's works for the benefit of his family"; a considerable sum resulted, and among the active supporters and subscribers were Prince ALBERT and the Duke of DEVONSHIRE. Happily, as we have already seen, Sir ROBERT PEEL granted Mrs. LOUDON an annuity of £100, so that the widow and her daughter were not entirely unprovided for.

At the best the financial results of LOUDON's forty years of authorship and other work were extremely disappointing. It is no consolation to remember that MILTON's daughter craved alms of the admirers of her father. The labourer does not always reap where he has sown. It is more than probable that LOUDON himself never expected to make the Arboretum a very profitable concern, for under the most favourable circumstances its public was a limited one, largely confined to libraries and landed proprietors in England and abroad. He, however, produced a monument more durable than brass; and if its reference value has somewhat lessened with the intervening century and the complete revolution of the theory and practice of horticulture, the Arboretum et Fruticetum Britannicum still remains one of the cornerstones of the horticultural library.



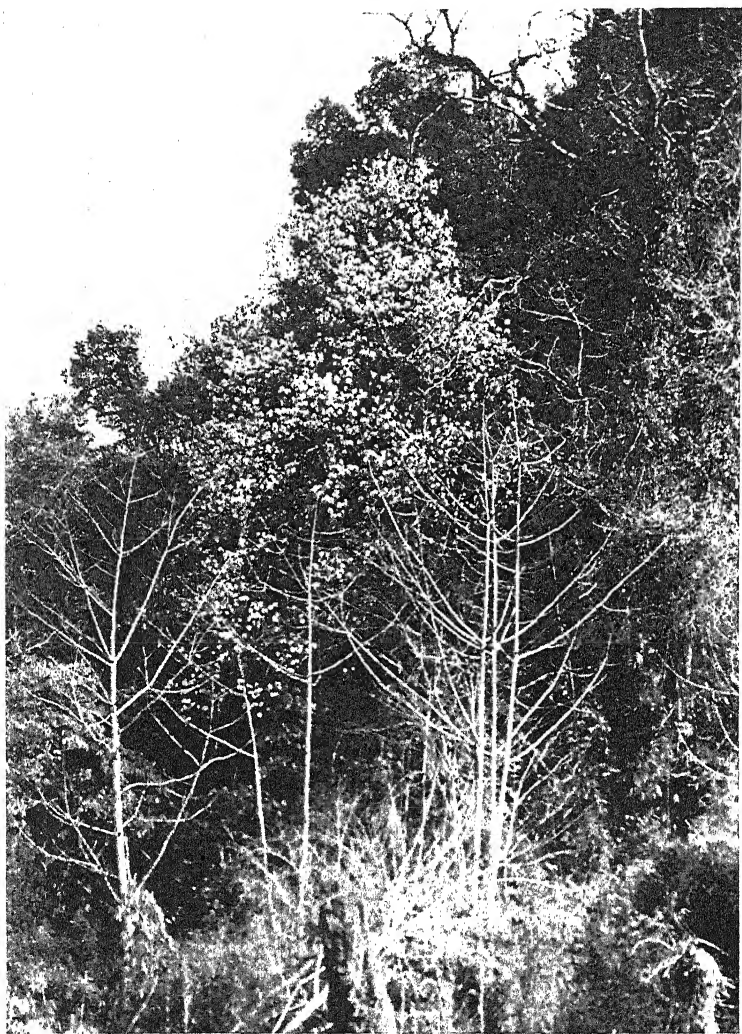


FIG. 72.—MICHELIA DOLTSOPA.



FIG. 73.—*VACCINIUM GLAUCO-ALBUM*.

[To face p. 285.

## VEGETABLES FOR PICKLING.

By H. V. TAYLOR, O.B.E., B.Sc., A.R.C.S.

[Read April 16, 1936; Mr. E. A. BUNYARD in the Chair.]

I HOPE I shall not disappoint you by limiting my lecture to a talk mainly on vegetables suitable for pickling, which is not quite the same as a talk on pickles. I am not an expert on pickles; some of you may know much more than I do on that subject. I have, however, made a study of vegetables for pickling, and I hope that some of the things I may say will be of interest and value.

The first observation I would make is that our outlook towards pickles has altered from time to time. Back in the past ages pickling was merely one of the processes, almost the only one, for preserving surplus crops. If a man had too many cauliflowers, onions or cucumbers he put the surplus down into pickle and preserved them for use at some other time. That kind of outlook is no longer necessary. Rapid modern transport has made it possible for us to draw supplies from other countries during periods of shortage. It is no longer necessary to put down into pickle the surplus crops for use in the winter time.

The canning of vegetables has also had its effect on pickles.

Our outlook now is to regard pickles in the same light that we do sauces and things of that kind, as something that can be added to an otherwise uninteresting cold meal to make it more appetizing and inviting.

Instead of using surplus produce special varieties are needed so that high-class pickles can be prepared.

This has made an enormous difference so far as growers in this country are concerned. The old books have records that in the seventeenth and eighteenth centuries gherkins were grown in the village of Sandy in Bedfordshire, and "10,000 bushels of gherkins are sent away each week to the pickle factories." These were surplus cucumbers that were available for pickling. I mention that to show that at one time vegetables for pickling were grown in this country. Sad to relate the outlook has since changed, and the factories have wanted special varieties and the supplies now come mainly from foreign sources.

The chief vegetables needed are relatively few. The four important vegetables are gherkins, onions, cauliflowers and cabbage, and just a few miscellaneous things, like walnuts, damsons, and a few other fruits.

These are sometimes pickled separately like gherkins or onions, or they are all mixed together to form a mixed pickle or piccalilli with

flavouring substances added. My remarks must be limited, however, to the chief vegetables that are used.

(1) *Gherkins* (fig. 74).—There is quite a big trade in gherkins and it seems to me rather extraordinary that, whilst our factories require such enormous quantities, it is almost impossible to buy a single real gherkin grown in this country. The imports of this particular commodity amount to over 1,000 tons of fresh gherkins, and 2,000 tons of gherkins in brine. Altogether over 3,000 tons of gherkins are needed by the factories in this country for making pickles, yet they all have to be imported instead of being produced here.

These gherkins have to be very carefully graded. They must be picked about every second day, and even then there will be variations in sizes. The sizes that are known in the trade are 'Midgets,' 'Standards,' and bigger sizes called 'Bastards' and 'Chumps.' The Bastards, being too big to be pickled alone, are cut up into slices and used in mixed pickles. The Standards range from 2 inches to 4 inches in length; gherkins over 4 inches are called Bastards and those over 4½ inches are called Chumps. There are further grades within these groups: there are, for instance, three grades of Midgets.

The varieties of gherkins grown for this purpose are called by different names in different places. One is the small Paris gherkin, which usually produces the largest quantity of Midgets; another is called the Meaux Green, which produces a certain number of small ones, a proportion of the Standards and also a proportion of the Bastards and Chumps; while a third is called Bourbonne. All are widely grown in France for this purpose. In Holland they are also known by these names, but are sometimes given other names by the Dutch seedsmen.

As to the growing of gherkins, not very much is known about it in England, but experiments have been going on now for three years which show that their cultivation is quite possible. The seed is sown, not too deeply, out of doors in the field, about the third week in May. From the seed sown thus pickling can begin after nine or ten weeks when the gherkins must be gathered every second day. They can either be sent off to the pickle factories or stored in brine. The one difficulty that has been experienced up to the present is that the plants, grown from seed which we have had to import from foreign countries, have always been very badly infected with mosaic disease, the crops consequently being rather small. The research workers are now, however, trying to select out of these rather diseased stocks seed from healthy plants which can be used for seed purposes in future. If this is successful we shall be able to produce crops in England as well as can be done in other countries.

The method of "brining" is simple; there are really two operations to perform. The first object in brining is to "cure" the gherkins, and in the process of curing certain chemical changes take place inside the gherkin, including the fermentation of the sugar and certain changes in the acids. In order to effect these changes the solution of

brine must be of the correct strength. Pure salt must be used; the ordinary salt used in dairies for the making of butter is very suitable. Very pure water is also necessary. What is known as a 10·6 per cent. solution of brine is used, the concentration being measured by an instrument called a salometer; the correct salometer reading for gherkins is the "40°" mark, at which the solution is at the right strength for the "curing" processes to go on within. They will turn a different colour and the flesh will become softer, rather more jelly-like than at the beginning. Since the gherkin consists of about 90 per cent. water, the water passes out into the brine solution which will get weaker. By means of the salometer the concentration can be tested and more salt can be added when required to maintain the correct strength of brine.

When curing is finished—a matter of three or four weeks—the gherkins will be ready for making into pickles, or putting into a stronger solution of salt in which they can be kept for quite a long time.

(2) *Onions* (fig. 75).—Two kinds of onions are used for pickling. It is well known that in this country we only grow about 7 per cent. of all the onions consumed in England although almost 100 per cent. could be grown of these culinary onions. The small-sized culinary onion is one of the kinds used for pickling. The growers riddle their onions and any that pass through the No. 3 riddle are sold for pickling. As to varieties, any onion that will remain hard and crisp when put into pickle can be used for that purpose. But those onions which become brown when pickled are, curiously enough, only appreciated in the South of England. In the North of England only pure white onions are appreciated.

The other type of onion used for pickling is the 'Silverskin,' a small white onion grown specially for pickling. Practically all of these onions are imported in brine from Holland for the use of the factories here. There are important details in this business, for in an ordinary crop of 'Silverskin' onions, while some are perfectly white and round others are striped with green or misshapen. The pickle manufacturer can get a good price for a bottle of perfectly white onions whereas the green-striped or "smoky" onions bring a very poor price. It is therefore very important to produce crops of 'Silverskins' with the highest possible percentage of pure white onions. That is a matter for the seedsmen to select out the type. In Holland the seedsmen have selected, and keep on selecting year after year until there are stocks one can buy that will produce onions practically all of the required type. These are known as the 'Pearl,' because they have a striking pearly appearance and no trace of that objectionable green stripe.

Seed is sown broadcast on poor soil, and the onions when lifted are of varying sizes, from the very small to those almost as big as walnuts. These onions must be separated into sizes. The first grade is 13 to 16 millimetres, the next are 16 to 18, 18 to 20, and 20 to 22 mm. There is in fact only two millimetres difference between the grades. The interesting part about it all is the price. While the little onion

was realizing last year £3 2s. 8d. per cwt., the big ones only made 27s. 9d.

These 'Silverskin' onions are delicate and have to be peeled at once and put into brine. In Bedfordshire a lot of onion-peeling was formerly done. In Sandy I once saw people peeling onions, but they were all very old. In the past they did not mind doing this job, although it is not a pleasant one to undertake. Still the people did it and rather enjoyed it. Their children were then allowed to help them and they got expert too. Now that the children cannot start until they are fourteen or fifteen years old they do not seem to take to the work of peeling onions, and when the old generation dies out in Bedfordshire I do not see how we are going to carry on with this onion-peeling unless the young generation can find out some way of doing it. Why not invent a machine which will take off the outside skin of these onions? We have machines for doing almost everything to-day and one is badly needed for peeling onions.

I have explained that the small white onions are the ones needed. These are treated rather differently from gherkins for after the onions are put into brine no change should take place. In fact, brine is used to store them conveniently until they can be made into pickles, and they are therefore put straight away into a concentrated solution of brine, roughly 16 per cent. No further change takes place and they can be kept there as long as is necessary.

The development of the pickled onion industry depends on growing the right type of onion. The pickling of the ordinary onion is passing out. The brown pickles are no longer appreciated in the North; we tolerate them in the South, but I think their time is limited. The smoky onions, similarly, do not appeal. It is essential to grow something which looks pleasing and tastes better when eaten, viz. the small pure white onions.

(3) *Cabbage*.—An enormous amount of pickled cabbage is used in England. Although some people in England grow pickling cabbage, and send it to the market, it is bought only by the housewife for pickling at home. It, however, is not suitable for the pickle factory, for it loses its colour when it is put into the boiling vinegar. The pickle factories require a special kind of a special colour. The pickle manufacturer cannot buy these dark red cabbages in England and so imports them. Last year 1,938 tons of pickling cabbage were imported. Although land is lying idle and many people are unemployed, yet we buy abroad 1,938 tons of a very simple thing like pickling cabbage because our factories cannot get it at home. The varieties called 'Blood Red' and 'Nigger Head' are of the right colour, i.e. it is persistent in the pickle. The cabbage must also have a big proportion of solid head to loose outside leaves, as is found in these two kinds. This cabbage reaches the factories in the fresh state. The pickle manufacturer stores it in a brine solution of about 16 per cent. until required.

(4) *Cauliflowers* (fig. 76).—We used at one time to grow quantities

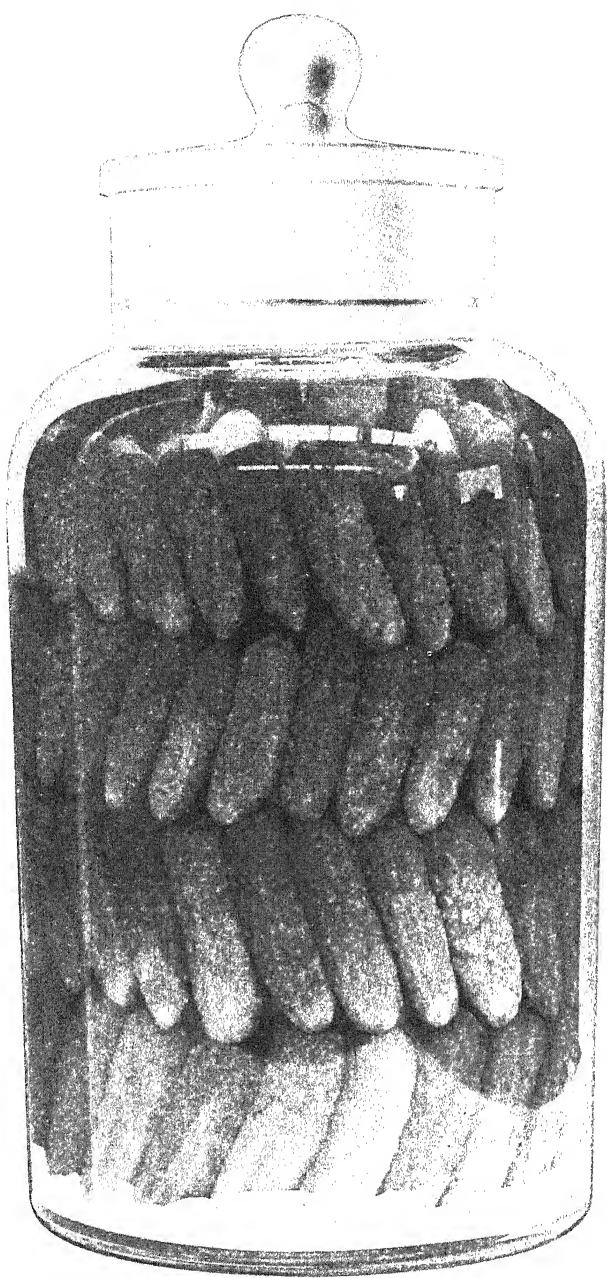
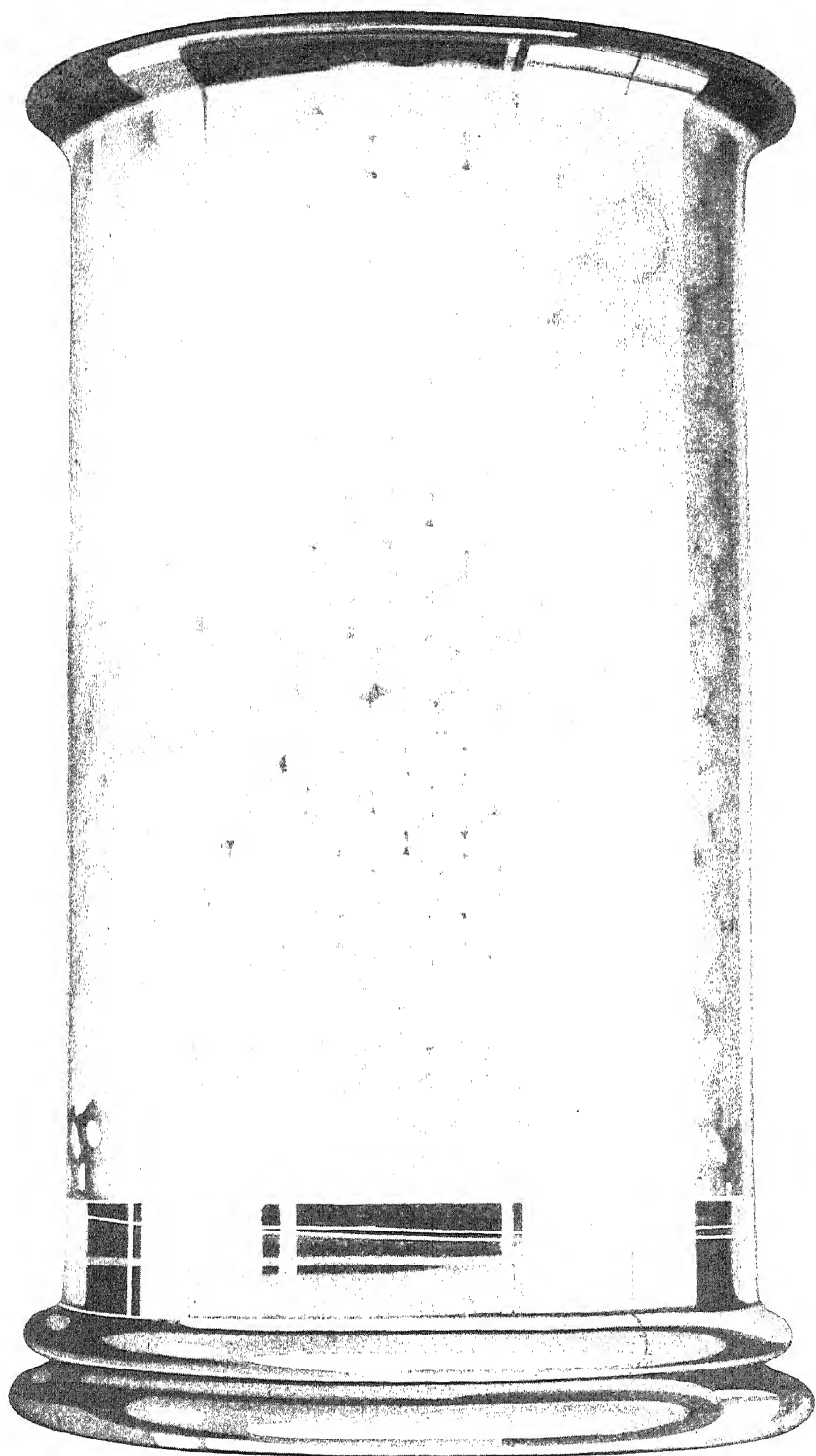


FIG. 74.—PICKLED GHERKINS.

[To face p. 288.

FIG. 75.—PICKLED SILVERSKIN ONIONS.





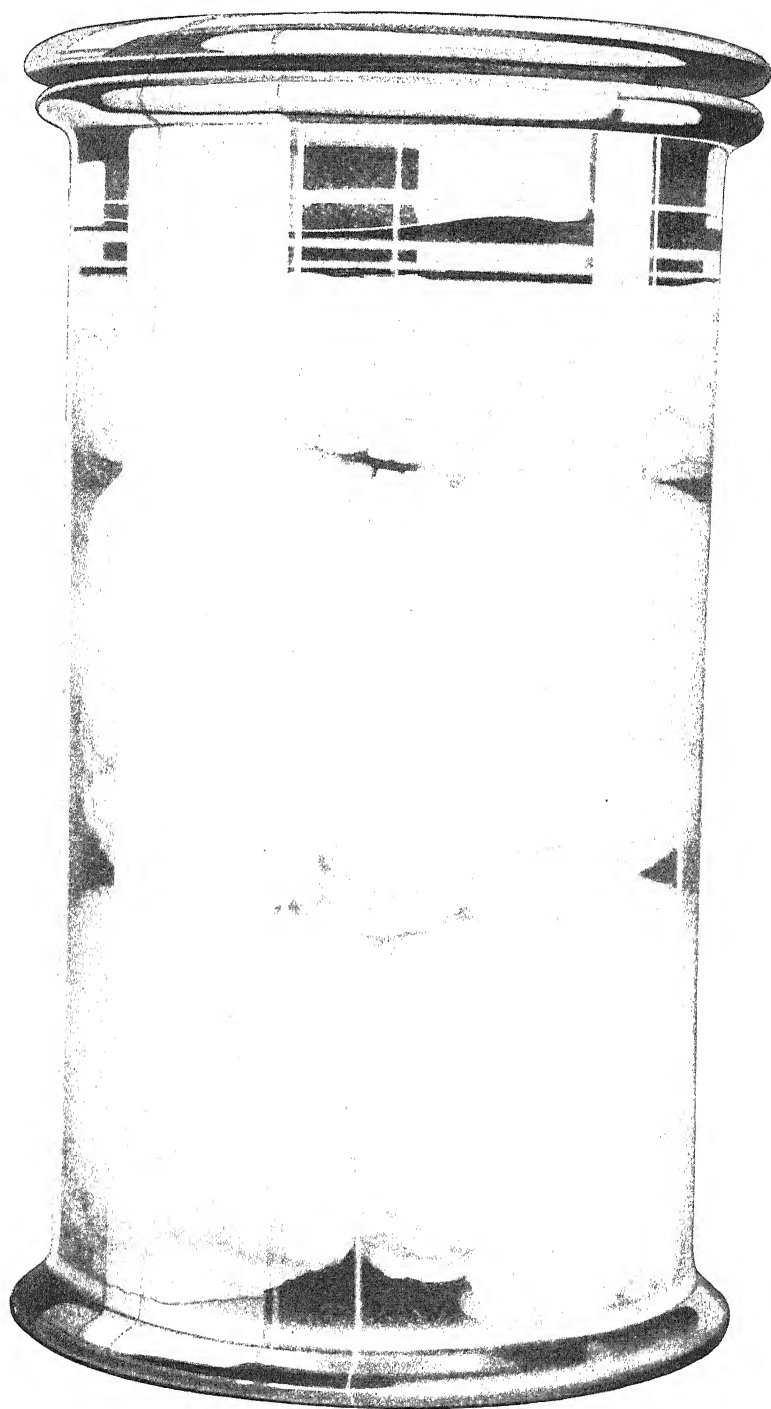


FIG. 76.—PICKLED CAULIFLOWER.

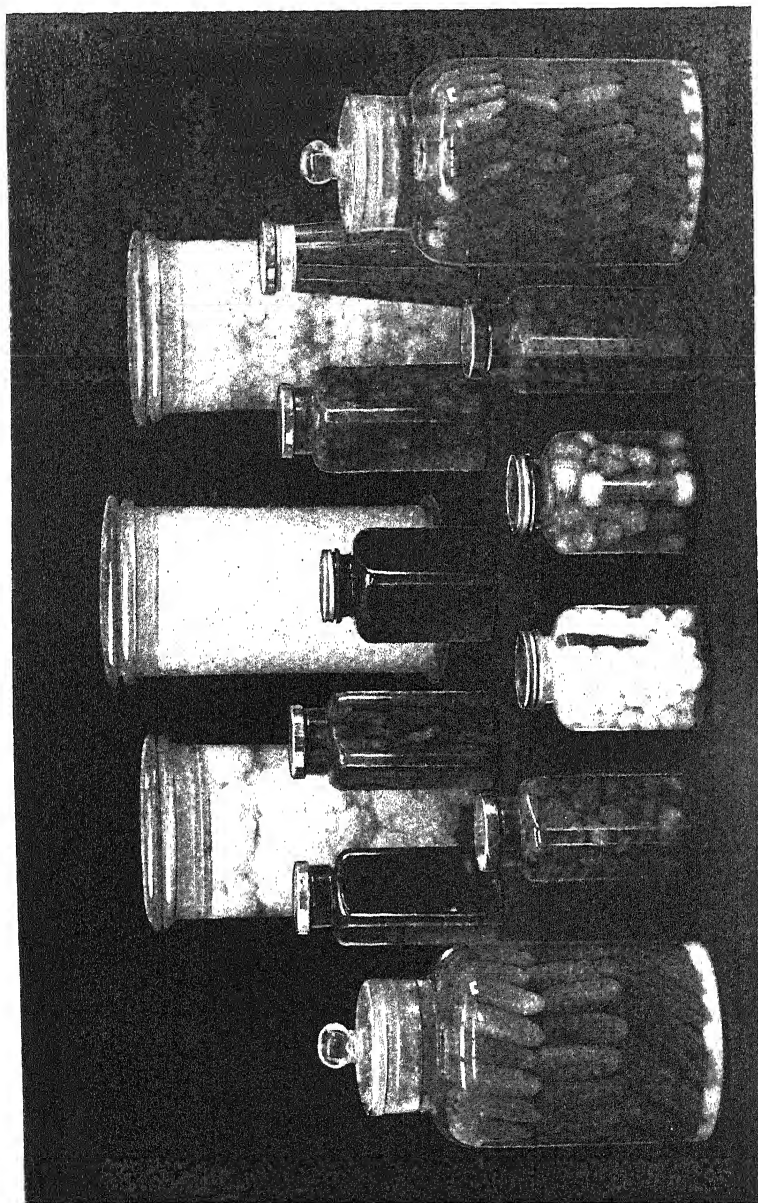


FIG. 77.—GROUP OF PICKLED VEGETABLES.

[To face p. 289.

of cauliflowers for pickling in England, and there are four or five growers in England, certainly not more than six or seven, who are doing it to-day. When, however, the factories wish to purchase cauliflowers for pickling, they have to go to Italy or Holland. Last year 119,000 cwts. of cauliflower in brine were imported for this purpose.

Cauliflower is used only in mixed pickles, so that the manufacturer wants a head that is almost all curd and no stem. There are certain varieties in which the proportion of curd is very high to the amount of stem. Experiments have been carried out and there is one outstanding variety, 'Danish Giant.' It is small and it is very delicate, so that the grower must wait until well into the season—the end of May or the beginning of June—before planting the seed. The weather then is warm and the plant will develop without any check. Owing to its small size this variety can be planted closely, but for the same reason is unsuitable for sale in the open market.

When ready the cauliflowers are cut and placed in brine of a strength of 60° salometer, or they may be put into a weaker solution of 10·6 per cent. and cured in the same way as gherkins, being finally stored, after five or six weeks, in the stronger solution.

Apart from those four big crops, the business is much smaller, although there is a very fair demand for pickled walnuts. As far as I know any variety of walnut is suitable. It is pickled with the green rind on the outside, being gathered and placed in brine just before the shell begins to form inside the rind. Walnuts are usually tested by a pin or a needle: if it can be pushed in easily the walnut is suitable for pickling; if the hard shell can be felt beginning to form inside, it is rather too late for pickling. I am glad that about half the pickled walnuts you buy in bottles to-day are home grown, the other half are imported from France or Italy.

A vegetable that is pickled to a small extent is beetroot. I have ascertained from the factories that they are not very particular as to any special variety provided that it is of a good colour throughout, from which slices of even size can be cut.

A fair quantity of pickled damsons is sold; for instance the 'Crittenden' variety is suitable. The damsons are picked before they are ripe and pickled before they become soft. There is a small sale for other pickled fruits like pears and crab apples, but the large business is in the four vegetables that I have dealt with in some detail—gherkins, onions, cauliflowers and cabbage.

In the days when pickling meant the conservation of surplus crops, England used to produce the vegetables for the pickle factories. Now that pickles stand alone as an independent article of diet, and have to compete with other articles, very special raw material is needed. In England we failed to appreciate the new point of view; the old crops are no longer needed as the small onions and gherkins and the cauliflowers with the high proportion of curd are being grown in other countries. I am hopeful that we may be more successful in the future.

## PLANTS TO WHICH AWARDS HAVE BEEN MADE IN 1936.

**Androsace cylindrica** × **hirtella**. A.M. May 5, 1936. From Dr. R. Bevan, Henley-on-Thames. A very choice plant for the alpine house, forming a dense cushion of tiny foliage rosettes which at flowering-time is almost completely hidden by snowy-white blossoms.

**Anemone potentilloides**. A.M. May 19, 1936. From Lady Lawrence, Dorking. A very small species from the Himalaya, with lobed toothed leaves scarcely  $\frac{1}{2}$  inch across and relatively large, narrow-petalled lilac flowers produced singly on erect stalks.

**Anemone Pulsatilla** 'Crimson Beauty.' A.M. May 5, 1936. From Lady Beatrix Stanley, Market Harborough. A very pretty seedling with flowers of medium size. The petals, usually eight in number, are maroon-crimson and contrast effectively with the central cluster of bright yellow stamens.

**Aquilegia viridiflora**. A.M. May 5, 1936. From the Rev. T. Buncombe, Black Torrington. A very graceful plant of unusual and subdued colouring. The leaflets of the pinnate foliage are grey-green; the sweetly fragrant flowers have long-spurred brownish-purple petals and emerald green sepals.

**Begonia** 'Florence Bush.' A.M. May 19, 1936. From Messrs. Blackmore & Langdon, Bath. A magnificent tuberous rooted variety with large double scarlet-orange flowers.

**Begonia** 'Gustav Lind.' A.M. May 19, 1936. From Mr. H. L. Pedersen, Waltham Abbey. A very useful bedding variety of Danish origin. The plants are about 6 inches high and the leaves are margined with red. The small bright rose-pink flowers are double and are borne in great abundance.

**Brassolaeliocattleya** × 'Princess Shimadzu' var. 'June.' F.C.C. May 19, 1936. From M. L. Wells, Esq., Chiddingfold, Surrey. The spike bore two large soft rosy mauve flowers, the labellum having a yellow throat and a purple front, which is crisped at the margin. The parents are *B.-l.-c.* × 'Catiluga' and *C.* × 'Prince Shimadzu.'

**Carnation** 'Doris Allwood' (Perpetual Flowering). A.M. May 19, 1936, for show and market. From Messrs. Allwood Bros., Haywards Heath. Plant of vigorous growth, free flowering, stems stiff and erect. Flowers fully 4 inches diameter, of good form, with a full centre, bright salmon-cerise shaded heliotrope, scented; calyx good.

**Cymbidium** × 'Altair,' Hanbury's var. A.M. May 5, 1936. From Frederick J. Hanbury, Esq., 'Brockhurst,' East Grinstead. This hybrid between *Pauwelsii* and 'Pipit' is rendered attractive on account of the bright golden-green colour of its flowers, the labellum having a rich crimson band near the apical margin.

**Cymbidium** × 'Dorchester' var. 'Alpha.' A.M. May 19, 1936. From Messrs. McBean. The spike carried 7 large flowers, ivory-white,

the labellum bordered with rich crimson. The parents are *C. × 'Tityus'* and *C. × Alexanderi*.

**Cymbidium × 'Hathor' Westonbirt var. F.C.C.** May 19, 1936. From Messrs. H. G. Alexander, Tetbury. The spike bore 16 well-formed flowers of bronze-green colour, the labellum cream-coloured, bordered with red. The parents are *C. × 'Cormorant'* and *C. × 'Wheatear.'*

**Cymbidium × 'Madonna' var. 'Dainty.' A.M.** May 19, 1936. From N. Prinsep, Esq., The Boxes, Pevensey Bay. The spike bore 6 flowers, ivory-white tinged with green, the column rose-pink and the crest yellow. The parents are *C. × Alexanderi* and *C. × 'P. W. Janssen.'*

**Cymbidium × 'Sedgewick.' A.M.** May 19, 1936. From Messrs. McBean, Cooksbridge. A charming golden-apricot hybrid, the labellum creamy white with a few crimson spots on the front lobe. Obtained by crossing *C. × Parvewelsii* with *C. × 'Magali Sander.'*

**Erica australis, Mountstewart var. A.M.** May 19, 1936. From the Marchioness of Londonderry, Newtownards. *Erica australis*, which comes from S.-W. Europe and N.-W. Africa, is less hardy than species of more northern distribution, but its rosy-purple flowers are very freely produced if some shelter can be given. In the present highly desirable variety the flowers are of a brighter, rosy shade.

**Fritillaria liliacea. A.M.** May 5, 1936. From Dr. P. L. Giuseppe, Felixstowe. This attractive Californian species produces an erect stem a foot high, clothed in its lower half with narrow, oblanceolate, pale green leaves. The terminal raceme bears five or six widely expanded, creamy-white flowers, with a green stripe on the inner face of each segment.

**Gentiana verna var. angulosa. F.C.C.** May 5, 1936. From T. T. West, Esq., Merstham. This variety differs from *G. verna* in its somewhat stronger growth and larger flowers, narrower leaves and more markedly winged calyx. The plant exhibited bore a large number of flowers of fine, rounded form and intense colour.

**Iris 'Agatha.' P.C.** May 19, 1936. Shown by Messrs. C. G. van Tubergen, Haarlem, Holland. A *regelio-cyclus* hybrid. Standards white, veined and lightly dotted with light purple; falls of a similar colour to standards but with a large blackish blotch at the beard.

**Iris antilibanotica. A.M.** May 19, 1936. Shown by G. P. Baker, Esq., Sevenoaks. Plant 2 feet tall with greyish-green foliage, sickle-shaped,  $\frac{1}{4}$  to  $\frac{3}{4}$  inch wide, 12 inches tall. Single flowered. Flowers large; standards  $3\frac{1}{2}$  inches long, erect, open with recurving margins, pale reddish-violet; falls reflexed,  $2\frac{1}{2}$  inches long, deep plum with blackish blotch at the beard. Beard pale yellow. Style branches creamy-buff. Crest dull smoky plum.

**Iris auranitica. F.C.C.** May 19, 1936. Shown by F. C. Stern, Esq., Goring-by-Sea. Plant 2 feet tall. Flowers large; standards erect, domed, 3 inches long by 4 inches wide, bright orange-yellow with light brown veining; falls reflexed, 3 inches long by  $2\frac{1}{4}$  inches wide of a

similar colour as the standards, but with a large purplish-brown blotch at the beard. Style branches and crest of a similar colour to the standards but of a darker shade.

**Iris 'Clotho.'** P.C. May 19, 1936. Shown by Messrs. C. G. van Tubergen. A vigorous *regelio-cyclus* hybrid with deep violet-purple standards and velvety blackish-purple falls.

**Iris Ewbankiana.** A.M. May 19, 1936. Shown by G. P. Baker, Esq., Plant 9 inches tall with grey-green foliage 6 to 7 inches in height,  $\frac{1}{8}$  inch wide. Single flowered. Flowers of medium size; standards erect, incurved, cone-shaped, pale greenish-white, heavily veined and spotted with plum; falls horizontal,  $1\frac{3}{4}$  inch long by  $\frac{3}{4}$  inch wide, tongue-shaped, pale greenish-white veined with plum-purple; blackish-purple blotch at beard. Beard plum-purple.

**Iris 'Wanadis.'** P.C. May 19, 1936. Shown by Messrs. C. G. van Tubergen. A *regelio-cyclus* hybrid bearing light reddish-purple with darker veined standards and whitish ground veined deep purple, with large blackish blotch at beard.

**Laeliocattleya**  $\times$  'Areca' var. 'Titanic.' F.C.C. May 19, 1936. From Messrs. McBean. The spikes bore two large rosy mauve flowers, the labellum crimson-purple and with gold veins in the throat. The petals are unusually developed, and meet one another in front of the dorsal sepal. The result of crossing C.  $\times$  'Enid' with L.-c.  $\times$  'General Maude.'

**Laeliocattleya**  $\times$  'Orange Gem.' A.M. May 19, 1936. From Lionel de Rothschild, Esq., Exbury. Although the segments are narrow, the flower is very attractive on account of its bright orange-yellow colour. Obtained by crossing L.-c.  $\times$  'Elinor' with L.-c.  $\times$  'G. S. Ball.'

**Lapeyrousia cruenta alba.** A.M. May 19, 1936. From Lady Lawrence, Dorking. A pretty, graceful, South African bulbous plant easily established near a sunny wall and equally valuable for pot culture in a cool house. The narrow leaves form a two-ranked basal tuft, and the white flowers, which have a light-rose blotch on each of the three lower segments, are borne in open spikes on tall, wiry scapes.

**Leontopodium alpinum** var. *crassense*. A.M. May 19, 1936. From Messrs. Ingwersen, East Grinstead. A neat and compact Edelweiss from the Pirin Mountains of Bulgaria. The clustered flower-heads are surrounded by densely tomentose grey bracts of varying length up to  $1\frac{1}{2}$  inch long.

**Miltonia**  $\times$  'Bruges,' Gatton Park var. A.M. May 19, 1936. From Sir Jeremiah Colman, Bt., Gatton Park, Reigate. This hybrid between M.  $\times$  'Lycaena' and M.  $\times$  'Princess Astrid' carried a spike of three rich crimson flowers, the labellum having a bright yellow blotch on the basal part.

**Miltonia**  $\times$  'Gatton Princess.' A.M. May 19, 1936. From Sir Jeremiah Colman, Bt. This attractive hybrid bore two spikes, each with three rose flowers, the labellum having a dark crimson blotch on

the basal area. Obtained by crossing *M.* × 'Amaranta' with *M.* × 'Duchess of Sutherland.'

\***Narcissus 'Brimstone.'** F.C.C. May 5, 1936. Raised by the Rev. G. H. Engleheart and shown by W. B. Cranfield, Esq., Enfield Chase. A refined, self-coloured, sulphur-yellow trumpet variety (Division 1a), with flowers  $4\frac{1}{2}$  inches in diameter borne on stout stems 18 inches long. The broad, overlapping segments were  $1\frac{7}{8}$  inch long. The corona, which was  $\frac{1}{4}$  inch longer, was  $2\frac{1}{4}$  inches in diameter at its reflexed and frilled mouth. This variety received an Award of Merit on May 7, 1929 (see JOURNAL R.H.S., 55, p. lxx).

**Narcissus 'Cushendall.'** A.M. May 19, 1936. Raised and shown by Mr. Guy L. Wilson, Broughshane, co. Antrim. A *Leedsii* variety (Division 4b), with flowers 3 inches in diameter borne on 20-inch stems. The white perianth segments were broad, overlapping and smooth, and  $1\frac{5}{16}$  inch long. The lightly pleated, almost flat corona was  $\frac{3}{4}$  of an inch in diameter and cream with a green centre.

**Narcissus 'Glynver.'** A.M. May 5, 1936. Raised by Mrs. R. O. Backhouse and shown by Mr. J. L. Richardson, Prospect House, Waterford. A bicolor *Barrii* variety (Division 3b), with flowers  $3\frac{1}{2}$  inches in diameter, well poised on stems 18 inches long. The white, smooth segments were  $1\frac{7}{16}$  inch long, and the bright orange-cadmium corona was  $\frac{15}{16}$  inch in diameter.

**Narcissus 'Lily of Rotherside.'** A.M. May 5, 1936. Raised by Mr. F. Herbert Chapman and shown by Messrs. R. H. Bath, Wisbech. An attractive white *Leedsii* variety (Division 4a), with flowers  $3\frac{3}{4}$  inches in diameter borne on stems 18 inches long. The broad, overlapping, smooth perianth segments were  $1\frac{5}{8}$  inch long. The funnel-shaped, slightly pleated corona was  $\frac{3}{4}$  inch long and  $1\frac{3}{8}$  inch in diameter at its indented margin.

**Nomocharis aperta.** A.M. May 5, 1936. From Andrew Harley, Esq., Dollar, Perthshire. This species has a very limited distribution in South-West Szechwan and North-West Yunnan, where it occurs at altitudes from 11,000 to 13,000 feet. It is a slender plant about 18 inches high, with scattered, dark green leaves and one or several flattish flowers 3 inches across. The rounded petals are light rosy-pink, blotched at the base with claret-red and sparingly spotted with rose.

**Odontoglossum crispum** var. 'Purity.' A.M. May 19, 1936. From N. Prinsep, Esq., The Boxes, Pevensy Bay. This garden-raised plant carried a spike of 9 well-formed flowers, which are white and superior to those generally produced on imported plants of the species.

**Omphalogramma Delavayi.** A.M. May 5, 1936. From Lord Aberconway, Bodnant. A robust species with pale green, ovate-lanceolate leaves 5 inches long. The flower-stalks are a foot in height, each bearing a solitary violet flower with six toothed lobes and a rather broad, purple tube striped internally with white.

\* For *Narcissus* awards given after trial at Wisley, see p. 300.

**Omphalogramma Rockii.** A.M. May 5, 1936. From J. T. Renton, Esq., Perth. This species, as exhibited, is smaller in all its parts than *O. Delavayi*, the cluster of broadly lanceolate leaves barely reaching a height of 3 inches. The slightly irregular flowers, which have six entire, violet lobes spreading from a narrow tube, are borne singly on 6-inch scapes.

**Oxypetalum coeruleum.** A.M. May 19, 1936. From Miss Howell, Aberdovey, and the Viscountess St. Cyres, Lymington. Perhaps better known as *Tweedia coerulea*, this is a very distinct greenhouse plant of the natural order Asclepiadaceae, native of Buenos Aires. The slender, downy shoots have a tendency to twine and bear soft green, hastate leaves in the axils of which appear three-flowered cymes of bright Cambridge-blue flowers.

**Phalaenopsis** × **'Katherine Siegwort'** var. **'Everest.'** F.C.C. May 19, 1936. From Messrs. Sanders, St. Albans. A remarkable result obtained through crossing *P. amabilis* with *P.* × **'Gilles Gratiot.'** The spike carried a dozen large white flowers, the round petals being a conspicuous feature.

**Phalaenopsis** × **'Katherine Siegwort'** var. **'Snowdon.'** F.C.C. May 19, 1936. From Messrs. Sanders. A very showy plant with a branched spike of 15 large and well-formed white flowers. The result of crossing *P. amabilis* with *P.* × **'Gilles Gratiot.'**

**Phyllodoce** × **hybrida.** A.M. May 5, 1936. From Mr. W. J. Marchant, Wimborne. A natural hybrid between *P. empetriiformis* and *P. Breweri*, two species of a small N.W. American genus of Ericaceae. The hybrid comes from Mt. Garibaldi, British Columbia, and is an erect shrub a foot high, with Heath-like leaves and bell-shaped, deep rose flowers on curved, pink stalks in a terminal umbel.

**Primula Gambeliana.** A.M. May 5, 1936. From Lord Aberconway, Bodnant. A rare species of the Rotundifolia section. The blades of the long-stalked leaves are ovate, sharply and evenly dentate. The purple, white-eyed flowers are carried in pairs on slender scapes about 5 inches high.

**Primula ingens.** A.M. May 5, 1936. From Lord Aberconway, Bodnant. This species is one of the largest and most handsome of the Nivalid Primulas. In its sturdy, erect growth it has a strong resemblance to *P. chionantha*, but differs from that species in the colour of its somewhat larger flowers, which are at first rosy-lavender deepening with age to an intense reddish-violet. In the plant exhibited the golden-mealy scape was over 2 feet high.

**Primula Kingii.** A.M. May 19, 1936. From Lord Aberconway, Bodnant. A member of the remarkable Amethystina section from the Eastern Himalaya and Western China. It is a completely efarinose plant with narrow, oblanceolate leaves 4 inches long and slightly longer scapes bearing (in the specimen exhibited) pairs of pendent, bell-shaped, reddish-maroon flowers. It is improbable that this species has been exhibited previously.



**Primula longiflora.** A.M. May 5, 1936. From Dr. R. Bevan, Henley-on-Thames. A very valuable and easily-grown European Primula. The narrow, clustered leaves are held in an erect position and so expose their white-mealy undersides, and each plant produces several 8-inch scapes bearing heads of golden-eyed, rosy-lilac flowers whose long, purple tubes provide a ready means of identification.

**Primula sinoplantaginea.** A.M. May 5, 1936. From R. B. Cooke, Esq., Corbridge. A robust Western Chinese species of the Nivales section. It has lanceolate, acute, obscurely crenulate leaves narrowed to the winged petioles and lightly yellow farinose beneath. The rich purple flowers are carried in a many-flowered umbel on a stout scape rising above the foliage.

**Ramondia Myconi var. rosea.** A.M. May 19, 1936. From Mr. E. Ballard, Colwall. *Ramondia Myconi*, whether lavender, pink or white is a most eminently desirable alpine plant, but discretion must be exercised in the acquisition of seedling plants, for there is variation in the size and form of the flowers and in their depth of colouring. The present form has very large, rounded, light rosy-pink flowers.

**Rhododendron × 'Break of Day.'** A.M. May 19, 1936, as a hardy flowering shrub, shown by Lionel de Rothschild, Esq., Exbury. A beautiful shrub with loose trusses about 5 inches long by 5 inches diameter of nine to fourteen flowers borne on glandular-viscid pedicels. The funnel-shaped corolla, 2 inches long by 2 inches across, is deep orange at the base, with short orange-red slightly spreading lobes; the orange-red calyx extends half-way up the corolla tube. The broad ovate glabrous leaves, up to 5 inches long by 2 inches broad, obtuse at both ends, are dark green above and paler below.

**Rhododendron × 'Embley Park.'** A.M. May 19, 1936, as a hardy flower and foliage plant, shown by J. J. Crosfield, Esq., Romsey, Hants. A hybrid between *R. campylocarpum* and *R. Thomsonii*. The compact globose trusses of fourteen or fifteen flowers are 4½ inches across by 4 inches deep. The flowers are small with wide spreading corollas 2 to 2½ inches wide by 1½ inch long, with pale rose lobes and yellowish-tinged tubes; the obtuse elliptical leaves are 4 inches long by 1¾ inch broad, bright green and glabrous; and the young twigs are reddish-brown and smooth.

**Rhododendron (Azalea) 'George Reynolds.'** A.M. May 19, 1936, as a hardy flowering shrub, shown by Lionel de Rothschild, Esq. A floriferous plant bearing many globose trusses, 7 inches across by 4 to 5 inches long, of nine to eleven large deep-yellow flowers, with orange mottling within on the upper lobe of the corolla, which is up to 3½ inches wide by 2 inches deep, and widely funnel-shaped. The young leaves are slightly hispid with a brownish tinge above, and ciliate on the veins below.

**Rhododendron × 'Kewense Hybrid' var. 'Tip-the-Wink.'** F.C.C. May 19, 1936, as a hardy flowering shrub, shown by Lt.-Col. G. H. Loder, Handcross, Sussex. A fine plant with loose trusses of large,

widely campanulate, pure white flowers, up to 5 inches across by 3 inches deep, the corolla lobes rounded and notched at the apex. The glabrous, rather thick leaves, up to 9 inches long by  $3\frac{1}{2}$  inches wide, are dark green and shiny above and lighter below.

**Rhododendron Nuttallii** var. **stellatum** Hutch. A.M. May 19, 1936, as a flowering shrub for the cold greenhouse, shown by Lionel de Rothschild, Esq. A small flowered, sweetly fragrant variety of *R. Nuttallii*, with a widely spreading calyx.

**Rhododendron** × ‘**Ouida**.’ A.M. May 19, 1936, as a hardy flower plant, shown by Lord Aberconway, Bodnant. This is a hybrid between *R.* × ‘*Astarte*’ and *R. Griersonianum*. A beautiful shrub, flowering when only 15 inches high. The flushed pink-rose flowers, pale on the lobes of the corolla and darker towards the base, are funnel-shaped, up to  $2\frac{1}{2}$  inches long by  $2\frac{1}{2}$  inches wide, and are borne in loose trusses, 6 inches across, of five or six flowers. The pedicels are pink and glandular, and the narrow oblanceolate leaves, up to 6 inches long by  $1\frac{1}{2}$  inch wide, are glabrous, bright green above and paler below.

**Rhododendron pachypodum**. F.C.C. May 19, 1936, as a flowering shrub for the cold greenhouse, shown by Lionel de Rothschild, Esq. A fine bush with small trusses of four or five large flowers borne on pedicels up to  $\frac{3}{4}$  inch in length. Corolla large, deeply lobed, spreading, up to 4 inches long by 4 inches across, white with a pale yellow streak on the inside of the top lobe; the small leathery leaves are lanceolate, 4 inches long by  $1\frac{1}{2}$  inch broad, dark green above and rusty below with small brown glandular dots.

**Rhododendron** × ‘**Rosabel**.’ A.M. May 19, 1936, as a hardy flowering shrub, shown by J. J. Crosfield, Esq. A hybrid between *R.* ‘*Pink Bell*’ and *R. Griersonianum*. A fine shrub with large loose trusses, 9 inches across by 8 inches long, of twelve flowers. Flower large,  $4\frac{1}{2}$  inches wide by 4 inches long, corolla deeply cleft, the lobes rounded and spreading, pale pink with darker pink veining throughout, more decided at the base; upper lobe sparsely speckled with pale red. Pedicels and peduncle pink, viscid and glandular; leaves narrowly oblanceolate, up to 7 inches long by 2 inches broad, dark green above and paler below with brown veins.

**Rhododendron Souliei** var. ‘**Exbury Pink**.’ F.C.C. May 19, 1936, as a hardy flowering shrub, shown by Lionel de Rothschild, Esq. A fine floriferous form of *R. Souliei*, with flowers a considerably deeper shade of pink than the original form, JOURNAL R.H.S., 35, p. cxxxvii, which was described as “pale rose.”

**Sarcocapnos enneaphylla**. A.M. May 5, 1936. From the Director, R.H.S. Gardens, Wisley. A dainty plant for the alpine house, closely allied to and resembling a *Corydalis*. It has very small, bipinnate, grey leaves and clustered racemes of tubular, pinkish-white flowers tipped with rose and yellow.

**Teucrium fruticans** var. **azureum**. A.M. May 19, 1936. From Collingwood Ingram, Esq., Benenden. *Teucrium fruticans* is a half-hardy, evergreen shrub of rapid growth. The silvery shoots and leaf-

undersides are more ornamental than the pale, French-grey flowers of the type, but the fine deep lavender-blue flowers of this variety collected by the exhibitor in the Great Atlas mountains greatly enhance its value.

***Viola cazorlensis*.** A.M. May 19, 1936. From Messrs. Ingwersen, East Grinstead. A rare and delicately beautiful species endemic to the Sierra Cazorla in Spain, and closely related to *V. delphinantha* of Greece and Bulgaria. The wiry, spreading stems bear palmately divided leaves with 3 to 5 linear lobes  $\frac{1}{2}$  inch long. The relatively large, long-spurred flowers have spatulate, magenta-pink petals, each of the lower three bearing a cerise spot.

***Viola cucullata*.** A.M. May 19, 1936. From Mrs. Bucknall, Doneraile. A vigorous North American species with large, rounded, white-eyed flowers of reddish violet. The long-stalked leaves are cordate, acute, somewhat wrinkled and obscurely toothed. The figure in the Botanical Magazine (t. 1795), published in 1816, shows a flower more blue in colour than the specimens exhibited.

***Vuylstekeara* × 'Cambria' var. 'N. Prinsep.'** A.M. May 19, 1936. From N. Prinsep, Esq. The erect spike bore five medium-sized flowers, the sepals and petals crimson-red, the labellum light rose with crimson spotting. Obtained by crossing *Odontoglossum* × 'Clonius' with *Vuylstekeara* × 'Rudra.'

***Watsonia stenosphon*.** A.M. May 5, 1936. From T. T. Barnard, Esq., Wareham. A bulbous plant for the cool greenhouse, from Caledon, S. Africa. From a tuft of bright green, narrow leaves 4 inches long rises a slender stem bearing in its upper half from five to seven bright salmon-scarlet, widely expanded, almost regular flowers.

***Weldenia candida*.** A.M. May 5, 1936. From Dr. P. L. Giuseppi, Felixstowe. A rare and interesting plant from Mexico and Guatemala, suitable for cultivation in the alpine house. *Weldenia* is a monotypic genus of Commelinaceae, closely allied to *Tradescantia*, and in appearance suggests a compact and highly refined edition of that plant. It forms a dense cluster of erect, lanceolate-elliptic, pale green leaves, from the centre of which arises a long succession of three-petalled, fugaceous flowers of purest white. The form shown, from Guatemala, had somewhat hairy leaves.

## THE AWARD OF GARDEN MERIT.—XXXIV.\*

By F. J. CHITTENDEN, F.L.S., V.M.H.

205. *LILIUM TIGRINUM* FORTUNEI.*Award of Garden Merit, August 8, 1927.*

*Lilium tigrinum* is too well known to need description, but possibly it is less well known that Lilies of similar form, colouring and requirements flower in succession, first the type *L. tigrinum*, then *L. tigrinum splendens*, then *L. tigrinum Fortunei*, the form to which the Award belongs, carrying the flowering well into autumn. *L. tigrinum* and its forms thrive in a soil devoid of lime, provided it is moist and well drained. They do not usually start into growth so early as *L. regale*, and are therefore less liable to have their flowers damaged by late frosts. They will grow in partial shade and are good for the herbaceous border.

*L. tigrinum Fortunei* came to England by accident in a consignment of *L. auratum* bulbs and flowered in Messrs. STANDISH's Royal Ascot Nurseries, where we first hear of it in 1866, as a "very noble, hirsute, tall, and vigorous Lily," 6 or 7 feet in height with pyramidal heads of flowers. The lower flower stalks are so long that the flowers stand far out from the stem, and the great number of flowers, "larger and more finely marked than those of *tigrinum*," make it a most desirable plant. It fortunately produced large bulbils very freely, and Messrs. STANDISH soon had a stock from which, no doubt, many of those now in cultivation have been derived, for none of the forms of *L. tigrinum* produce seeds freely.

There is a good coloured plate of *L. tigrinum* in ELWES's Monograph, t. 38, and black-and-white figures in our JOURNAL, 25, p. 106, and 26, p. 379.

206. *LILIUM* HENRYI.*Award of Garden Merit, July 30, 1928.*

Dr. AUGUSTINE HENRY sent home dried specimens of Lilies collected near Ichang in Central China in 1888, and among them Dr. J. G. BAKER found a new species with flowers somewhat of the form of *L. tigrinum* but yellow and spotted with red-brown spots on the inner

\* The notes on the first hundred plants to receive the Award of Garden Merit have been collected from our JOURNAL, vols. 47 to 53, and published as a pamphlet, price 1s. For subsequent notes see vol. 54, pp. 218 and 423; 55, pp. 121 and 276; 56, pp. 80 and 245; 57, pp. 65 and 354; 58, pp. 171 and 400; 59, pp. 131, 308, 360, 406 and 449; 60, pp. 89 and 545; and 61, pp. 94, 138, 225 and 265.

half of the segments. Mr. CHAS. FORD of the Hong Kong Botanic Garden secured bulbs and sent some to Kew, where they flowered in 1889 under glass, and the plant was figured from these in the Botanical Magazine, t. 7177. Though likened to *L. tigrinum* it is dissimilar in most ways. Its large mahogany bulb is quite distinct, its foliage is more like that of *L. auratum*, the floral segments are narrower than in *L. tigrinum*, and it is a plant for a loamy, not an acid, soil. Furthermore it starts into growth early and therefore needs shelter, like *L. regale*, from late frosts. Its slender stems are scarcely stiff enough to hold its three or four large and heavy flowers upright without support.

The figure in the Botanical Magazine already referred to scarcely does justice to its colouring, which is better shown in the coloured plate in The Garden, vol. 40, p. 422, but, as the flowers rapidly bleach in the sun, the best colouring is seen only when they are developed in partial shade.

## NARCISSI AT WISLEY, 1934-6.

SEVERAL years ago a system of registration of Narcissus names was inaugurated by the Royal Horticultural Society and the list of varieties, mostly raised in gardens, now numbers over two thousand. It is being added to annually, and last year alone 150 names of new varieties were recorded. Seedling raising has been going on very actively during the past fifty years in this country and many, especially Trumpet and Poetaz varieties, have also been raised in Holland. Canada, the United States, Australia, New Zealand and now Norway are all contributing to the list, and there is little wonder that the amateur who would like a few good Narcissi for his garden finds it difficult to select. Bulb-merchants' catalogues help to some extent, but the most comprehensive of these cater also for specialists and contain bewildering lists, sometimes of varieties so highly priced that none but the specialist can purchase them. The smaller lists, too, often contain only varieties good in their day, but now outclassed. Some of the older varieties are, of course, still indispensable. Few would wish to banish 'Emperor,' or exclude *poeticus recurvus* from their gardens but, nevertheless, speaking generally, there are among the newer varieties many more worthy of a place than the majority of the old. Size has been increased without loss of grace, form has been improved without sacrifice of scent, colour has been secured without garishness, stature without weakness or gawkiness, solidity without clumsiness.

Not all these good qualities are combined in every new variety—far from it—and some that are lovely on the show bench lack some of the qualities that fit a plant for a place in the garden. They may be shy in flowering, or slow of increase, or suffer from the effects of weather, burn in the sun or snap in the wind, be easily damaged by frost or spot with the rain, may not hold their flowers well above the foliage, or they may quickly pass out of flower. These faults can only be learned by observation in the garden and they are not likely to be emphasized by those who have stocks to dispose of.

The only way to discover suitability for garden planting is to plant under garden conditions, and remembering that the vast majority of gardens, while they will grow Narcissi with a little care, are not situated in climates pre-eminently favourable nor on soils best suited for the full development of the flower, the trial should be made in a garden where climatic and soil conditions are not above the average.

Such trials have, therefore, been arranged from time to time in the Society's Gardens at Wisley, and two have already been reported upon in this JOURNAL (*see* vol. 53, p. 376 and vol. 57, p. 81). At each of these certain varieties have been selected for awards, and subsequent trials have on the whole confirmed the judgment then passed.

The present trial of newer varieties (figs. 78 and 79) was planted in the autumn of 1933 at the western end of Seven Acres in turfy loam. Twenty-five bulbs of each variety accepted for trial were planted in a clump and the clumps were interspersed among widely planted shrubs as they would be in an ordinary garden. All the bulbs were given the warm bath treatment before planting to ensure that neither eelworms nor the grubs of *Narcissus* flies should interfere with their growth, and on the whole the varieties planted have made satisfactory clumps. A few proved to be affected with yellow stripe or some similar trouble and were removed lest neighbouring bulbs should become infested.

The trial was inspected several times during each spring by the *Narcissus* and *Tulip* Committee and promising varieties were selected. Final judgment was given in the spring of 1936, and the following notes show the varieties selected in each Class and the grading given by the Committee's recommendations.

The Awards indicated below in black type following the name of a variety all date from the spring of 1936 and no date is quoted for the award lest there be confusion regarding the flowering period. It will be seen that the flowering of the different varieties takes place over a considerable period and so that comparison shall be fair the dates of flowering in 1936 are given. In many years the season of flowering will begin earlier—it was about sixteen days earlier in 1935.

All the Awards indicated below in black type are "for garden use." In all 262 varieties were planted and of these five were discarded on account of ill-health.

The Society adopted a classification of Daffodils in 1909 which, with slight modifications from time to time, has met with general acceptance. There are, as in every classification of natural objects, varieties that are not easy to place—border-line varieties which while they have the appearance of varieties of one class by strict application of the scale actually fall into another—but this difficulty is not frequent and as a classification is necessary and must be artificial it must also be followed.

In this Classification eleven Divisions were arranged but Division XI for various species and wild forms was not represented in the trial. The varieties under trial are grouped in the remaining ten Divisions.

DIVISION I comprises the TRUMPET VARIETIES, *i.e.* those varieties in which the crown or trumpet is as long as or longer than the perianth segments.

Three sub-divisions can be distinguished here :

- a. The trumpets are yellow or lemon and the perianth of the same shade or lighter (but not white).
- b. Both trumpets and perianth are white.
- c. The trumpets are some shade of yellow and the perianth is white or whitish.

**DIVISION 1a** is a large one and was represented in the trials by thirty-eight varieties. Six of these were selected for Awards of Merit, five were Highly Commended, four were Commended.

**BRANDON, A.M.** Raised and sent by Messrs. Bath, Floral Farms, Wisbech.\* This Award was given especially for earliness of flowering which began March 20 and ended April 20. A vigorous plant with grey-green foliage, and 24-inch stems at flowering time. Flower  $4\frac{1}{4}$  inches wide, perianth clear yellow, flat and overlapping, as long as the trumpet ( $1\frac{3}{4}$  inch), trumpet bright buttercup yellow, 2 inches wide at the crenate mouth. Flowers produced in first year 34, in third 63.

**DECENCY, A.M.** Raised and sent by Messrs. Van Deursen of Sassenheim, Holland. Flowering began on March 25 and lasted till April 29. A vigorous plant with greyish green leaves rather shorter than Brandon, and rather dropping stems of 23 inches. Flower  $4\frac{3}{8}$  inches wide, perianth bright clear pale yellow, flat, overlapping,  $1\frac{3}{4}$  inch long; trumpet of a rather deeper shade,  $1\frac{1}{4}$  inch long, and  $1\frac{3}{8}$  inch wide at the crenate mouth. Flowers in first year 25, in third 84.

**SOLFERINO, A.M.** Raised by Messrs. van Tubergen and sent by Messrs. de Graaff-Gerharda of Lisse, Holland. Flowering began on April 14 and continued until May 11. A vigorous plant with greyish-green foliage and 24-inch stems. Flower  $4\frac{5}{8}$  inches wide, perianth and trumpet light sulphur, the latter darker towards the margin; perianth segments  $1\frac{1}{2}$  inch, overlapping, trumpet 2 inches long, 2 inches wide at the crenate mouth. Flowers 25 in first year, 52 in third.

**SULPHUR, A.M.** Raised and sent by Mr. P. D. Williams, V.M.H., Lanarth, St. Keverne, Cornwall. Flowering from March 20 to May 1. Another early yellow trumpet Daffodil. A very vigorous variety with stiff stems 22 inches long. Flower  $3\frac{3}{4}$  inches wide, perianth deep sulphur yellow, the trumpet rather deeper in shade; perianth segments rather pointed; trumpet  $1\frac{1}{2}$  inch long, and  $1\frac{1}{2}$  inch wide at mouth. Flowers 15 in 1934, 60 in 1936. (A.M. for cutting and garden, April 8, 1927.)

**WINTER GOLD, A.M.** Raised and sent by Messrs. Barr, 11 King Street, Covent Garden, London, W.C. 2. Flowering began March 20 and continued until April 21. Another award given particularly on account of earliness. Vigorous, foliage green, stem 18 inches at flowering time. Flower  $3\frac{3}{4}$  inches wide; perianth buttercup yellow,  $1\frac{1}{2}$  inch long, overlapping for about one-third; trumpet golden yellow,  $1\frac{3}{4}$  inch long and  $1\frac{5}{8}$  inch wide at crenate mouth. Flowers 11 in first year, 53 in third.

**WRESTLER, A.M.** Sent by Messrs. R. A. Vanderschoot, Hillegom, Holland. Flowering from March 23 to April 29. A vigorous plant with erect foliage 18 inches high and stems of 20 inches. Flower  $4\frac{1}{4}$  inches wide; perianth light buttercup-yellow,  $1\frac{1}{8}$  inch long with margins recurved; trumpet buttercup-yellow,  $1\frac{1}{2}$  inch long, straight except at the rolled crenate mouth. 27 flowers in first year, 86 in third.

\* The address of the sender is given on the first occurrence of his name.



**DANDY BOY, H.C.** Raised by Mr. G. H. Engleheart and sent by Messrs. Bath. Flowering from March 30 to May 1. Foliage grey-green, 17 inches long, stems stiff and upstanding, 20 inches long, with the 4-inch wide flower very well posed. Perianth bright golden yellow, trumpet a shade darker; perianth segments  $1\frac{7}{10}$  inch long, flat, overlapping; trumpet 2 inches long, nearly straight. Flowers in first year, 26, in third 54.

**ORMOLU, H.C.** Raised and sent by Mr. W. B. Cranfield of East Lodge, Enfield Chase, Middlesex. Flowering from April 2 to May 8. Foliage grey-green, 18 inches long, stem 20 inches. Flower  $4\frac{1}{4}$  inches wide; perianth  $1\frac{3}{4}$  inch long, flat, overlapping, rich lemon; trumpet buttercup-yellow,  $1\frac{3}{4}$  inch long, frilled at mouth. 6 flowers in first year, 43 in third year.

**SIEGFRIED, H.C.** Raised by Messrs. de Graaff and sent by Messrs. Barr. Flowering began March 30, ended May 8. Vigorous, flower stems stiff, 20 inches long. Flower  $3\frac{3}{4}$  inches wide; perianth deep sulphur-yellow, margins recurved; trumpet  $1\frac{1}{4}$  inch long,  $1\frac{7}{8}$  inch wide, golden yellow. Flowers in first year 11, third year 34. Slow of increase. (C. for garden 1928.)

**SULPHUR PRINCE, H.C.** Raised by the Brodie of Brodie, sent by Mr. G. L. Wilson of Broughshane, Co. Antrim. Flowering from April 14 to May 11. A very vigorous plant with grey-green foliage 24 inches long, and stems of 28 inches. Flower  $4\frac{1}{4}$  inches wide; perianth pale sulphur-yellow,  $1\frac{7}{8}$  inch long, flat, overlapping; trumpet  $1\frac{3}{4}$  inch long, pale yellow. 25 flowers in first year, 86 in third.

**YELLOW BEAUTY, H.C.** Raised and sent by Messrs. Barr. Flowering began March 25 and ended April 29. Foliage 18 inches, stem 21 inches long, stiff and erect. Flower 4 inches wide, bright yellow; perianth  $1\frac{7}{8}$  inch long, rather starry; trumpet  $1\frac{7}{8}$  inch long, expanded and frilled at the mouth. 22 flowers in first year, 86 in third.

**CHARLES I, C.** Raised and sent by Mr. P. D. Williams. Flowering from March 30 to May 8. Stems 22 inches long, stiff and erect. Flower  $4\frac{1}{4}$  inches wide, golden-yellow with the trumpet slightly darker; perianth  $1\frac{7}{10}$  inch, flat, overlapping; trumpet equalling perianth. 17 flowers in first year, 41 in third from 22 bulbs.

**GOLDEN RAY, C.** Raised by Mr. Warnaar, sent by Messrs. de Graaff-Gerharda. Flowering from April 2 to May 15. A vigorous plant with grey-green foliage 18 inches long; stem 24 inches long, stiff and erect. Flower 4 inches wide; perianth  $1\frac{5}{8}$  inch long, flat, overlapping, bright golden-yellow, trumpet a shade darker,  $1\frac{3}{4}$  inch long, nearly straight except at mouth. Flowers 25 in first year, 49 in the third year.

**MAXIMUS, C.** Sent by Mrs. Whale of Coverack, Cornwall. Flowering from March 18 to April 20. Vigorous, foliage dark greyish-blue, 18 inches long, twisted, stem 22 inches long. Flower  $3\frac{1}{2}$  inches across, rich buttercup-yellow, the trumpet a shade darker; perianth  $1\frac{1}{2}$  inch long, somewhat twisted; trumpet  $1\frac{1}{2}$  inch long, expanded. Flowers 17 in first year, 50 in third. An early flowering form.

**TREASURE, C.** Raised by Messrs. van Tubergen and sent by Messrs. Bath. Flowering began March 30 and ended May 1. Plant vigorous, foliage grey-green, stiff and erect like the 19-inch stem. Flower  $3\frac{3}{4}$  inches wide; perianth  $1\frac{1}{2}$  inch, flat, overlapping, rich lemon-yellow; trumpet  $1\frac{1}{2}$  inch long, straight except at mouth, bright light buttercup-yellow. Flowers 26 in first year, 41 in third.

The following varieties in this Division were also included in the trial, the name in brackets being that of the sender: **AEROLITE** (Barr), **BUCENE** (Bath), **BUTTERBOY** (Bath), **FOEMAN** (Bath), **GOLDEN EMPEROR** (Pearson), **GOLDEN RULE** (Barr), **GOLDEN SUNSET** (Bath), **HERMES** (Watts), **LEMBERG** (Barr), **LORD ANTRIM** (G. L. Wilson), **MICHAEL** (Cranfield), **MID-SEASON GOLD** (van Deursen), **NUGGET** (Watts), **POLEMON** (Barr), **POTENTATE** (Pearson), **PREMIER** (Bath), **PRIDE OF HILLEGOM** (de Graaff-Gerharda), **REMUS** (Watts), **ROMULUS** (Watts), **RICHARD** (Lower), **ROYALIST** (Lower), **SWASTIKA** (Cranfield), **WARWICK** (Barr).

**DIVISION 1b**—white trumpet Daffodils—was represented by sixteen varieties in the trial. Of these one received the Award of Merit, one was Highly Commended and two Commended.

**ROXANE, A.M.** Raised by Messrs. van Tubergen and sent by Messrs. van Deursen. Flowering began on March 27 and ended April 29. A very vigorous plant with rather spreading greyish-green foliage 16 inches long, and a stiff but rather drooping stem 17 inches long. Flower  $4\frac{3}{4}$  inches wide; perianth creamy-white,  $1\frac{3}{4}$  inch long, flat, overlapping; trumpet very pale sulphur,  $1\frac{5}{8}$  inch long, 2 inches wide at the mouth. Flowers 24 in first year, 49 in the third.

**PACIFIC, H.C.** Raised and sent by Messrs. de Graaff-Gerharda. Flowering from March 23 to April 29. A vigorous plant with erect foliage about a foot high, and a 15-inch stem. Flower  $4\frac{1}{4}$  inches wide, with creamy-white lobes  $1\frac{3}{4}$  inch long, flat and overlapping; trumpet sulphur,  $1\frac{3}{4}$  inch long, straight. Flowers in first year 24, in third 44. Award especially for earliness.

**ESKIMO, C.** Raised by the Brodie of Brodie and sent by Messrs. Barr. Flowering from April 6 to May 11. A vigorous plant with a 16-inch stem. Flower  $3\frac{1}{2}$  inches wide, drooping; creamy-white with the frilled mouth of the trumpet pale cream; trumpet  $1\frac{1}{2}$  inch wide. Flowers 19 in first year, 44 in third.

**MRS. ERNST H. KRELAGE, C.** Raised by Messrs. Krelage and sent by Messrs. de Graaff-Gerharda. Flowering from April 2 to May 6. Vigorous with erect grey-green foliage 16 inches long, stem 20 inches. Flower 4 inches wide; perianth  $1\frac{5}{8}$  inch long, flat, overlapping, creamy-white; trumpet  $1\frac{3}{4}$  inch long, slightly expanded, pale sulphur. Flowers in first year 28, in third 67. A good plant for slopes.

The remaining representatives of this Division were **BEERSHEBA** (G. L. Wilson), **CLAIR DE LUNE** (Cranfield), **DENT BLANCHE** (Bath), **GEORGINA CLOGSTOUN** (Lower), **GREYSTEEL** (Williams), **HALFA** (Cranfield), **IMPERATOR** (de Graaff-Gerharda), **MIMI** (Barr), **MYFIDA** (Watts),

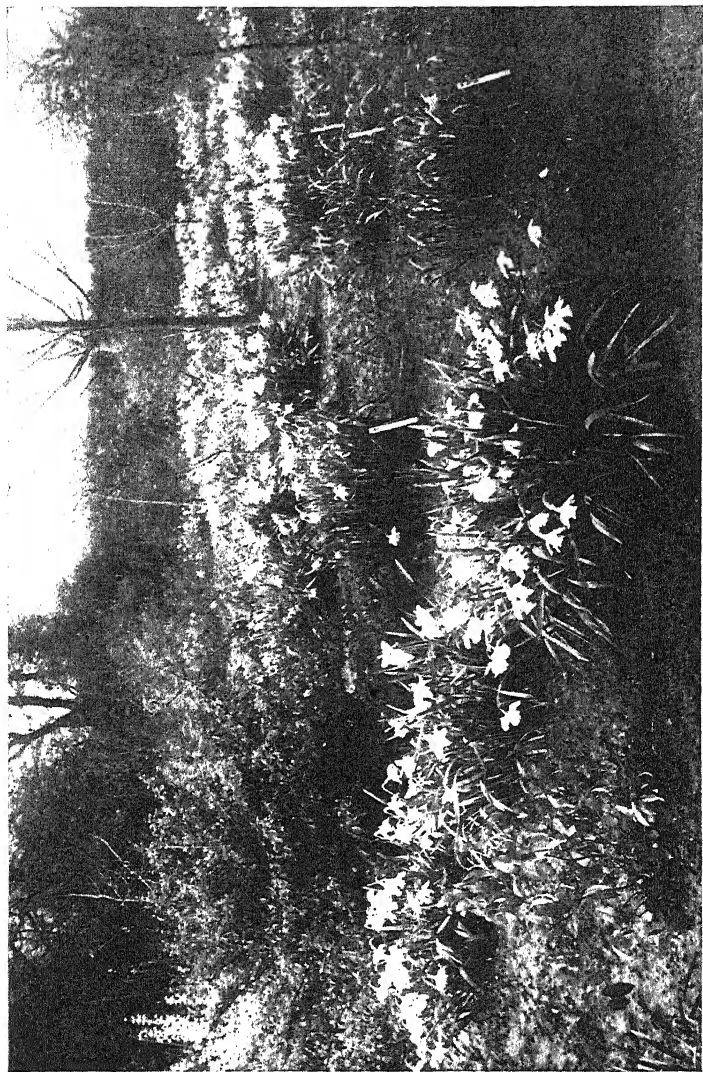


FIG. 78.—PART OF DAFFODIL TRIAL AT WISLEY, 1935.

[To face p. 304.

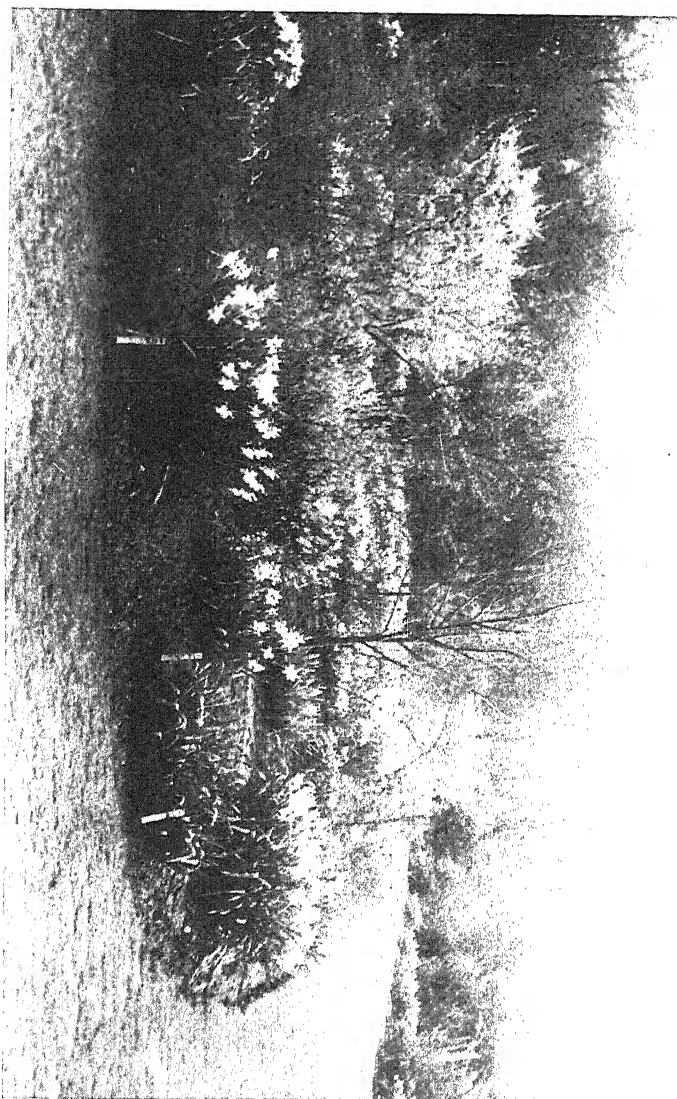


FIG. 79.—PART OF DAFFODIL TRIAL AT WISLEY, 1935.

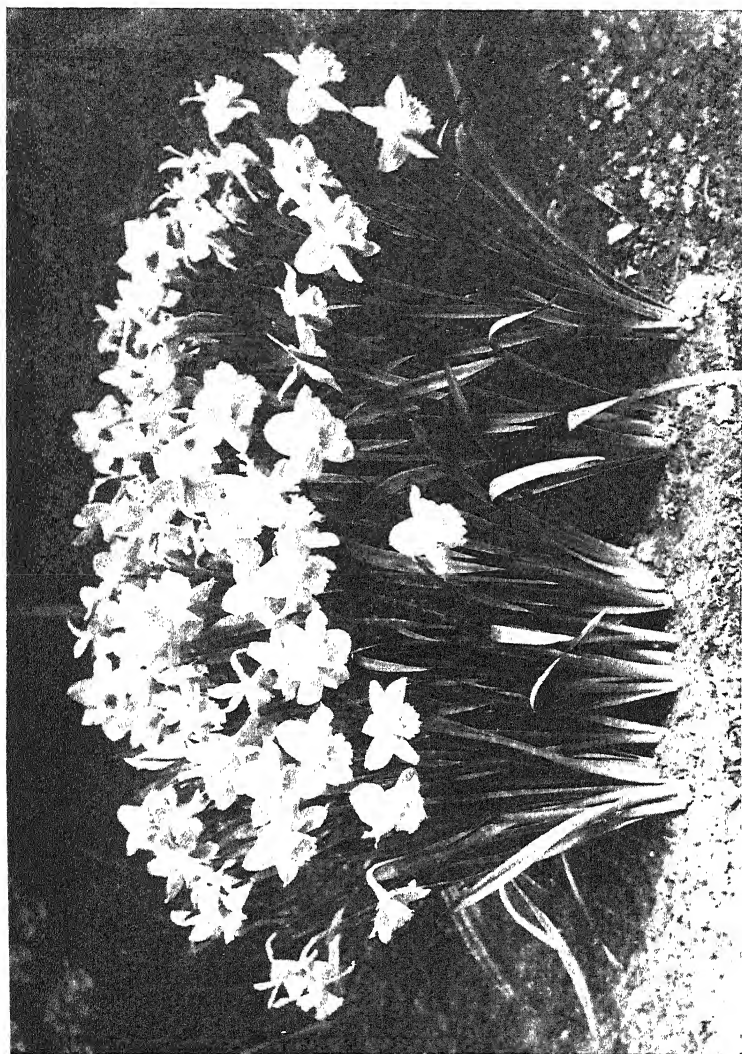


FIG. 80.—NARCISUS 'HAVELOCK' AT WISLEY.  
(p. 305)



FIG. 81.—NARCISUS 'YELLOW BIRD' AT WISLEY.  
(p. 307)

PERKER (Cranfield), ST. GERMANS (Barr), SARAH BERNHARDT (de Graaff-Gerharda).

DIVISION 1c—bicolor Trumpets—with a white or nearly white perianth and yellow trumpet was represented by fourteen varieties, of which one received an Award of Merit and one was Commended.

MRS. E. C. MUDGE, **A.M.** Raised by Mrs. R. O. Backhouse and sent by Messrs. Barr. Flowering began April 21 and ended May 18. A vigorous plant with erect foliage 20 inches long and a stem of 22 inches. Flower  $4\frac{1}{2}$  inches wide; perianth 2 inches long, flat, overlapping, clear creamy-white; trumpet 2 inches long, almost straight, frilled, clear rich sulphur. Flowers in first year 20, in third 68.

BAMBOULA, **C.** Raised and sent by Messrs. Barr. Flowering from April 2 to May 11. A vigorous plant with blue-green foliage, foliage at first drooping, and a stiff erect 20-inch stem. Flower  $4\frac{3}{8}$  inches wide; perianth  $1\frac{1}{2}$  inch long, flat, overlapping, creamy-white; trumpet 2 inches long, frilled at mouth, pale buttercup-yellow. Flowers in first year 24, in third 67.

The other varieties grown in this Division were AMBOYNA (Barr), CRANFIELD (Cranfield), DUKE OF ANJOU (Barr), FLORENCE PEARSON (Cranfield, Pearson), MARCH WHITE (Bath), GOLDEN BEAUTY (de Graaff-Gerharda), JACK SPRATT (G. L. Wilson), PRIDE OF LISSE (de Graaff-Gerharda), SOLVEIG (Barr), SPRINGDALE (Barr), THE DON (Bath), TOPLIGHT (R. A. Vanderschoot).

DIVISION 2. The distinguishing character of the Incomparabilis Division of Narcissus (Division 2) lies in the cup being shorter than the perianth segments, but not less than one-third of their length. The perianth may be yellow or white, the cup yellow with or without red colouring or even stained red throughout—not white, cream or citron.

This Division is subdivided into two. The subdivision (a) is marked by the yellow perianth, subdivision (b) by the white or whitish perianth.

DIVISION 2a was represented by a large number of varieties in the trial, viz. forty-five. Of these one gained a First Class Certificate, eleven an Award of Merit, six were Highly Commended and three Commended.

HAVELOCK, **F.C.C.** Raised and sent by Mr. P. D. Williams. Flowering from April 2 to May 4. Stem 16 inches. Flower  $3\frac{3}{8}$  inches wide, regular; perianth overlapping, flat primrose with white tips; corona 1 inch long, funnel-shaped with frilled mouth, buttercup-yellow. Flowers 22 in first year, 96 in third. (Fig. 80.)

AMBULE, **A.M.** Raised by Mrs. R. O. Backhouse, sent by Mr. A. M. Wilson, Middlemoor, Presteigne, Radnorshire. Flowering began April 2, ended May 1. A vigorous plant with drooping foliage, and stiff erect stem 24 inches high. Flower  $4\frac{1}{8}$  inches wide; perianth  $1\frac{3}{4}$  inch



long, overlapping, flat, sulphur ; corona 1 inch deep, crenate, lemon deeply edged orange. Flowers in first year 29, in third 73.

**CARLTON, A.M.** Raised by Mr. P. D. Williams and sent by Mr. Richardson of Prospect House, Waterford. Flowering from March 30 to May 1. Vigorous with erect foliage of 22 inches and stem of 23 inches. Flower  $4\frac{3}{4}$  inches wide ; perianth 2 inches long, flat, overlapping, clear pale yellow ; corona  $1\frac{3}{8}$  inch deep, rather frilled, clear yellow. Flowers in first year 23, in third 134. (NIMROD, also in the trials, is very similar to CARLTON, but the flowers are somewhat smaller.)

**GARIBALDI, A.M.** Raised by Mr. A. M. Wilson and sent by Mr. Richardson. Flowering from April 14 to May 6. Foliage drooping at tips, stem 20 inches long. Flower 4 inches wide ; perianth  $1\frac{3}{4}$  inch long, flat, toothed, overlapping ; lemon-yellow ; corona  $\frac{3}{4}$  inch deep, cup-shaped, bright rich orange. Flowers 23 in first year, 85 in third.

**GRENADE, A.M.** Raised by Mr. Engleheart, sent by Mr. Cranfield. Flowering began April 3, ended May 11. Foliage glaucous, rather spreading, stem 24 inches. Flower  $3\frac{3}{4}$  inches wide ; perianth flat, overlapping, margins inclined to recurve, deep sulphur ; corona  $1\frac{1}{8}$  inch deep, tubular with frilled mouth, bright orange-yellow. Flowers in first year 38, in third 54. (A.M. for gardens in 1927.)

**HELIOS, A.M.** Raised by Mr. Engleheart, sent by Messrs. R. A. Vanderschoot. Flowering began March 23, ended May 1. Vigorous, with greyish foliage 20 inches high, and stiff erect stem of 25 inches. Flower  $4\frac{3}{8}$  inches wide ; perianth  $1\frac{7}{8}$  inch long, flat, overlapping, deep sulphur ; corona  $1\frac{1}{8}$  inch deep, slightly frilled at margin, buttercup-yellow, darkening with age. Flowers 37 in first year, 97 in third.

**JUBILANT, A.M.** Raised and sent by Mr. P. D. Williams. Flowering began April 2, ended May 8. Vigorous, stem stiff and erect, 22 inches. Flower  $3\frac{3}{4}$  inches wide ; perianth overlapping, margins slightly incurved, deep sulphur-yellow ; corona 1 inch deep, funnel-shaped, bright buttercup-yellow. Flowers 16 in first year, 55 in third.

**KILLIGREW, A.M.** Raised by Mr. P. D. Williams and sent by Messrs. Richardson and G. L. Wilson. Flowering from March 30 to May 1. A very vigorous plant with erect foliage 22 inches high, and stems of 24 inches. Flower 4 inches wide ; perianth  $1\frac{3}{4}$  inch long, flat, overlapping, regular, primrose ; corona  $\frac{3}{4}$  inch deep, cup-shaped, deep orange, paler at base. Flowers in first year 26, in third 97.

**LUCINIUS, A.M.** Sent by Messrs. de Graaff-Gerharda. Flowering began April 6, ended May 11. Plant vigorous, foliage erect, 22 inches high, stem of 24 inches. Flower  $4\frac{1}{2}$  inches wide ; perianth 2 inches long, flat, overlapping, clear lemon ; corona 1 inch deep, buttercup-yellow. Flowers 45 in first year, 75 in third year.

**RED DEFIANCE, A.M.** Raised and sent by Messrs. Bath. Flowering from April 6 to May 1. Foliage 21 inches, stem stiff and erect, 22 inches long. Flower  $4\frac{1}{4}$  inches wide ; perianth  $1\frac{1}{2}$  inch long, overlapping, flat, clear lemon-yellow ; corona 1 inch deep, cup-shaped, bright orange. Flowers in first year 48, in third year 78.



**SMEROE, A.M.** Raised and sent by Messrs. de Graaff-Gerharda. Flowering began April 9, ended May 1. Foliage 18 inches with drooping tips, stem 20 inches long. Flower inclined to droop,  $4\frac{1}{4}$  inches wide. Perianth  $1\frac{3}{4}$  inch long, flat, overlapping, clear sulphur; corona  $\frac{7}{8}$  inch deep, funnel-shaped, bright rich orange with narrow white edge. Flowers 39 in first year, 46 in third.

**YELLOW BIRD, A.M.** Sent by Messrs. R. A. Vanderschoot. Flowering from April 9 to May 6. Foliage erect, 22 inches long, stem 24 inches. Flower  $4\frac{3}{8}$  inches wide; perianth  $1\frac{3}{4}$  inch long, rather twisted, overlapping, sulphur; corona  $1\frac{1}{4}$  inch deep, cup-shaped, buttercup-yellow. Flowers 38 in first year, 119 in third. (Fig. 81.)

**BONAPARTE, H.C.** Raised and sent by Messrs. Barr. Flowering from March 27 to May 6. Stem 16 inches. Flower  $3\frac{3}{4}$  inches wide; perianth overlapping, flat, pale sulphur-cream; corona  $1\frac{1}{8}$  inch deep, funnel-shaped, bright yellow. Flowers (from 18 bulbs) first year 12, third year 27. (H.C. for garden 1927.)

**BUTTERBOWL, H.C.** Raised and sent by Mr. G. L. Wilson. Flowering began March 30, ended May 4. Erect foliage, 15 inches high, stem stiff and erect, 17 inches. Flower 4 inches wide; perianth  $1\frac{1}{2}$  inch long, flat, overlapping, lemon-yellow; corona  $1\frac{1}{10}$  inch deep, cup-shaped, pale buttercup-yellow. Flowers 24 in first year, 92 in third.

**COVERACK GLORY, H.C.** Raised by Mr. P. D. Williams, sent by Mrs. Whale. Flowering began March 30, ended May 4. Foliage 22 inches high, stem 24 inches. Flower  $3\frac{3}{4}$  inches wide; perianth  $1\frac{1}{2}$  inch wide, overlapping, flat, clear yellow; corona  $1\frac{1}{10}$  inch deep, beaker-shaped, light buttercup-yellow. Flowers in first year 25, in third 112.

**NIMROD, H.C.** Raised and sent by Mr. P. D. Williams. Flowering from March 30 to May 1. Foliage erect, 16 inches, stem 22 inches. Flower  $4\frac{1}{2}$  inches wide; inclined to droop, clear yellow, the corona deeper; perianth  $1\frac{3}{4}$  inch wide, flat, overlapping; corona  $1\frac{3}{10}$  inch deep, beaker-shaped. Flowers 18 in first, 82 in third year. See CARLTON.

**ST. IVES, H.C.** Raised and sent by Mr. P. D. Williams. Flowering began March 30, ended May 1. Stem 16 inches, stiff, erect. Flower  $3\frac{3}{4}$  inches wide, deep sulphur, the corona deeper; perianth flat, overlapping; corona  $1\frac{1}{5}$  inch deep, frilled at mouth. Flowers 24 in first year, 61 in third. (H.C. for gardens 1932.)

**YELLOW POPPY, H.C.** Raised by Messrs. Cartwright and Goodwin, sent by Messrs. R. A. Vanderschoot. Flowering from April 14 to May 13. Foliage 18 inches long, stem 26 inches. Flower  $3\frac{3}{4}$  inches wide; perianth  $1\frac{5}{8}$  inch long, flat, overlapping, pale primrose; corona  $\frac{3}{8}$  inch deep, basin-shaped, bright yellow. Flowers in first year 35, in third 84.

**BEAT-ALL, C.** Sent by Messrs. de Graaff-Gerharda. Flowering began April 14, ended May 11. Foliage 16 inches, stem 22 inches. Flower  $4\frac{3}{8}$  inches wide; perianth  $1\frac{7}{8}$  inch long, overlapping, flat, creamy-white; corona  $\frac{7}{8}$  inch deep, funnel-shaped, buttercup-yellow, keeping colour well. Flowers 27 in first year, 37 in third.

**GOLDEN FRILLED, C.** Sent by Messrs. de Graaff-Gerharda. Flowering began March 30, ended May 4. Foliage and stem 18 inches. Flower 4 inches wide; perianth  $1\frac{5}{8}$  inch long, flat, overlapping, bright clear yellow; corona  $1\frac{1}{4}$  inch deep, funnel-shaped, buttercup-yellow, darker at the frilled edge. Flowers 26 in first, 37 in third year.

**HOSPODAR, C.** Raised by Mr. J. C. Williams, sent by Messrs. Barr. Flowering began March 30, ended May 1. Foliage 20 inches; stiff, erect stem, 22 inches. Flower  $3\frac{3}{4}$  inches wide; perianth  $1\frac{5}{8}$  inch long, flat, overlapping, rich primrose; corona  $\frac{7}{8}$  inch deep, cup-shaped, light orange deepening with age. Flowers in first year 23, in third 68.

Other varieties in the trial belonging to Division 2a were **BARONET** (Pearson), **BLACKWELL** (Cranfield), **BREILA** (Watts), **CORYN** (Watts), **FLEURS D'ORANGER** (van Deursen), **GERMOC** (de Graaff-Gerharda), **GOLDEN MEASURE** (Bath), **GRACKLE** (Barr), **GRAF ZEPPELIN** (R. A. Vanderschoot), **IRMA** (de Graaff-Gerharda), **KWASIND** (Pearson), **LADY FAIR** (Barr), **LIOBA** (de Graaff-Gerharda), **MORNING GLORY** (Barr), **NANCY CUMBERLEGE** (Lower), **NOBLE** (Cranfield), **NORMAN CROSS** (Bath), **ODON WARLAND** (de Graaff-Gerharda), **PRINCESS VICTORIA** (Watts), **SCARLET ORB** (Bath), **TENEDOS** (G. L. Wilson), **TREWINCE** (P. D. Williams), **WOVEN GOLD** (Bath), **YELLOW STANDARD** (Barr).

**DIVISION 2b.** This section of *Incomparabilis Narcissi* differs from 2a by having white or whitish perianths. It was represented in the trials by twenty-three varieties, of which one received the First Class Certificate, three the Award of Merit, one was Highly Commended and one Commended.

**FOLLY, F.C.C.** Raised and sent by Mr. P. D. Williams. Flowering from April 21 to May 13. Foliage 18 inches long, stem 24 inches. Flower  $3\frac{3}{4}$  inches wide; perianth  $1\frac{1}{2}$  inch long, flat, overlapping, creamy-white; corona  $\frac{3}{4}$  inch deep, basin-shaped, bright rich orange retaining colour well. Flowers in first year 18, in third 64.

**EVA, A.M.** Raised by Mr. Dent, sent by Messrs. de Graaff-Gerharda of Noordwijk, Holland. Flowering began April 2, ended May 6. Foliage 16 inches, drooping at tips, stem 17 inches. Flower  $3\frac{1}{2}$  inches wide; perianth 1 inch long, flat, overlapping, white; corona  $\frac{1}{2}$  inch deep, basin-shaped, sulphur, edged deep orange, fading in sun. Flowers 43 in first, 99 in third year.

**MARIAN CRAN, A.M.** Raised by Mr. P. D. Williams and sent by Messrs. de Graaff-Gerharda. Flowering began April 2 and ended May 1. Foliage 20 inches, stem stiff and erect, 24 inches. Flower  $3\frac{1}{2}$  inches wide; perianth  $1\frac{1}{2}$  inch long, flat, overlapping, clear lemon-yellow; corona  $\frac{5}{8}$  inch, basin-shaped, bright orange, keeps its colour well. Flowers 22 in first, 60 in third year.

**WARLOCK, A.M.** Raised by Mr. P. D. Williams, sent by Mr. A. M. Wilson. Flowering from April 2 to May 4. A vigorous plant with stiff stems 20 inches long and flowers  $3\frac{3}{4}$  inches wide; perianth flat, overlapping, creamy-white with a yellow base; corona  $\frac{1}{10}$  inch deep,

funnel-shaped, yellow shading to orange at the frilled mouth. Flowers 24 in first, 83 in third year. (A.M. for gardens 1930.)

**REWA, H.C.** Raised by Dr. Lower and sent by Mr. P. Lower, Manland Avenue, Harpenden, Herts. Flowering from March 30 to May 1. A vigorous plant with leaves 16 inches long and stiff stem of 24 inches. Flower  $3\frac{1}{2}$  inches wide inclined to droop; perianth  $1\frac{3}{8}$  inch long, flat, overlapping, white; corona  $\frac{7}{8}$  inch deep, cup-shaped, pale orange, rim burns badly. Flowers 29 in first, 40 in third year.

**SIMLA, C.** Raised by Dr. Lower and sent by Mr. P. Lower. Flowering from April 21 to May 11. Foliage and stem 20 inches long. Flower  $3\frac{3}{4}$  inches wide; perianth  $1\frac{5}{8}$  inch long, flat, scarcely overlapping, white; corona  $\frac{1}{2}$  inch deep, funnel-shaped, lemon with broad orange edge. Flowers 32 in first, 80 in third year. (Fig. 82.)

Other varieties in Division 2*b* in the trial were **ALED** (Watts), **BEAUTY OF RADNOR** (P. Lower), **BERNARDINO** (Cranfield), **CASIMIR** (Barr), **DELHI** (P. Lower), **JOHN EVELYN** (Cranfield), **LAUGHTER** (Watts), **LOCH FYNE** (Barr), **IDRIS** (Watts), **LADY DARNLEY** (P. Lower), **MELYN** (Watts), **MODEST MAID** (Bath), **NAVARRE** (Bath), **ORANGE DELIGHT** (Bath), **PEDESTAL** (Barr), **VALET** (Bath), **WHITEWELL** (de Graaff-Gerharda).

DIVISION 3 includes Narcissi with a cup less than one-third the length of the perianth pieces, yellow, red-stained or red (excluding varieties falling into Divisions 7, 8 and 9).

Two subdivisions are recognizable: (a) in which the perianth is yellow; (b) in which it is white or whitish.

DIVISION 3*a*, varieties with a cup less than one-third of the yellow perianth, was represented in the trial by eleven varieties (there were none in the 1928 trial), and of these one received the Award of Merit, and one was Highly Commended.

**DINKIE, A.M.** Raised by Mr. Chapman and sent by Mr. Calvert of Coverack, Cornwall. Flowering began April 27 and ended May 15. Foliage 16 inches, stem 24 inches long. Flower  $2\frac{7}{8}$  inches wide; perianth  $1\frac{9}{10}$  inch long, flat, overlapping, sulphur; corona  $\frac{3}{10}$  inch deep, basin-shaped, pale orange, edged bright orange-scarlet. Flowers 25 in first, 53 in third year.

**NANNY NUNN, H.C.** Raised by Mrs. R. O. Backhouse and sent by Messrs. de Graaff-Gerharda. Flowering from April 2 to May 13. Stem 16 inches, rather drooping, but flowers erect,  $3\frac{1}{4}$  inches wide; perianth flat, overlapping, pale cream with darker base; corona  $\frac{3}{8}$  inch deep, funnel-shaped, deep orange-red at mouth, orange at base. Flowers 28 in first, 95 in third year. (H.C. for gardens 1927.)

The other varieties falling into Division 3*a* were **BELLE CHINOISE** (de Graaff-Gerharda), **FEZ** (Barr), **JOHN PEEL** (P. Lower), **MIDAS** (P. D. Williams), **MINAFON** (Watts), **OWEN** (Watts), **PENHALLOW**

(P. D. Williams), SERAGLIO (R. A. Vanderschoot), VERA (R. A. Vanderschoot).

DIVISION 3*b*, the Narcissi with a cup less than one-third the length of the white perianth segments, is another large class represented by twenty-seven varieties, only one of which was Highly Commended.

MING, **H.C.** Raised by Mrs. R. O. Backhouse and sent by Mr. A. M. Wilson. Flowering from April 27 to May 13. Foliage with drooping tips, 16 inches high, stem 24 inches. Flower  $3\frac{3}{4}$  inches wide, perianth  $1\frac{5}{8}$  inch long, flat, overlapping well, white; corona basin-shaped,  $\frac{1}{4}$  inch deep, pale cream. Flowers 25 in first, 72 in third year.

The other varieties in this Division were AGNI (de Graaff-Gerharda), BONNET (Watts), BRACELET (Watts), CHERRY (Watts), CHARTER (Watts), DOMINO (Watts), DOSORIS (de Graaff-Gerharda), DRAGOON (Bath), JINGLE (Watts), JOHN DIX (van Deursen), KASHGAR (P. Lower), LADY DERBY (de Graaff-Gerharda), LADY MOORE (de Graaff-Gerharda), LYRIC (Bath), MRS. BARCLAY (Barr), NOBILITY (de Graaff-Gerharda), QUEEN OF HEARTS (Cranfield), RED CHIEF (Cranfield), RIBAND (Watts), \*SUNRISE (Watts, Barr), SUSETTE (Barr), TALAMBA (P. Lower), THE SAPPER (P. Lower), TRIBUNE (Watts), TRIUMPHATOR (de Graaff-Gerharda), VILLAGE BEAUTY (Barr).

DIVISION 4 contains the varieties with a white or nearly white corona shorter than the white or nearly white perianth. There are two subdivisions: (*a*) having the varieties with the corona more than one-third but less than equal to the perianth pieces; (*b*) those with the corona less than one-third of the perianth pieces.

DIVISION 4*a* was represented by thirty-six varieties, of which two received the First Class Certificate, four the Award of Merit, four were Highly Commended, and three Commended.

MARMORA, **F.C.C.** Raised by the Brodie of Brodie and sent by Mr. G. L. Wilson. Flowering began March 30 and ended May 1. A vigorous plant with foliage 21 inches long and a stem of 24 inches. Flower  $4\frac{1}{2}$  inches wide, inclined to droop; perianth  $1\frac{3}{4}$  inch long, flat, overlapping, creamy-white; corona  $1\frac{1}{4}$  inch deep, beaker-shaped, sulphur. Flowers in first year 20, in third 74.

TUNIS, **F.C.C.** Raised and sent by Mr. P. D. Williams. Flowering from March 30 to May 6. Stem of 20 inches. Flower  $4\frac{1}{4}$  inches wide; perianth overlapping, slightly recurving at margins, creamy-white; corona  $1\frac{1}{4}$  inch deep, tubular with expanding mouth, pale sulphur, edged amber, deepening with age. Flowers 18 in first, 71 in third year. (C. for gardens 1927, A.M. 1928.) (Fig. 83.)

CICELY, **A.M.** Raised and sent by Mr. A. M. Wilson. Flowering from March 30 to May 1. Flower somewhat drooping on a 19-inch

\* This variety received **A.M.** for market after trial at Wisley, 1927. This award was confirmed.

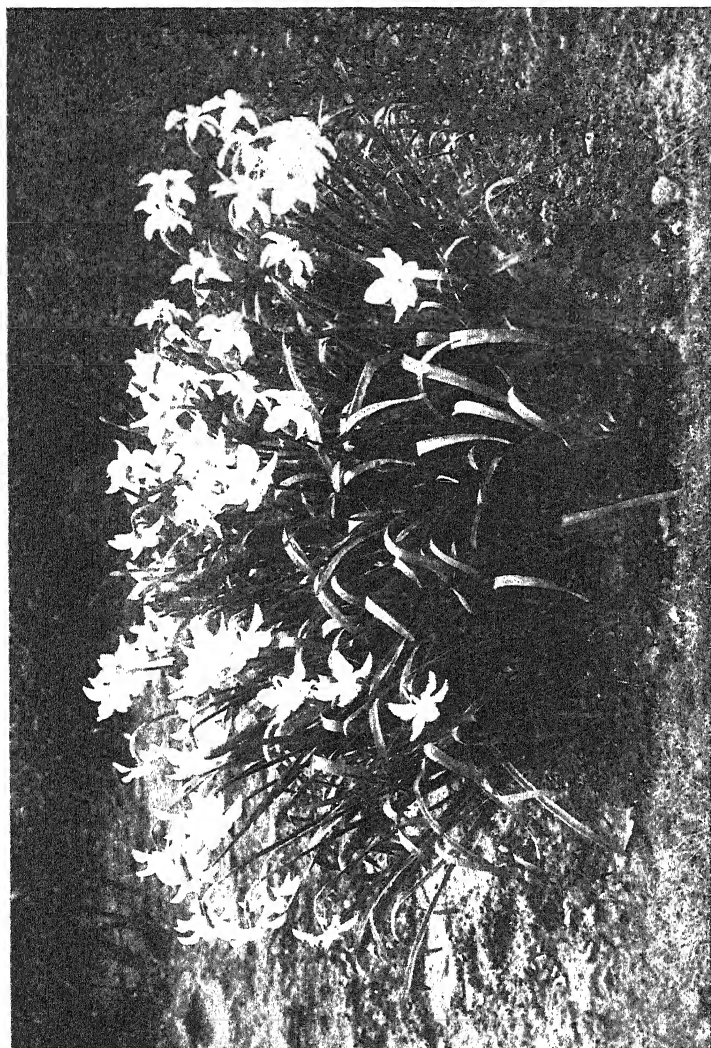


FIG. 82.—NARCISSUS 'SIMLA' AT WISLEY.  
(p. 309)

[To face p. 310.]

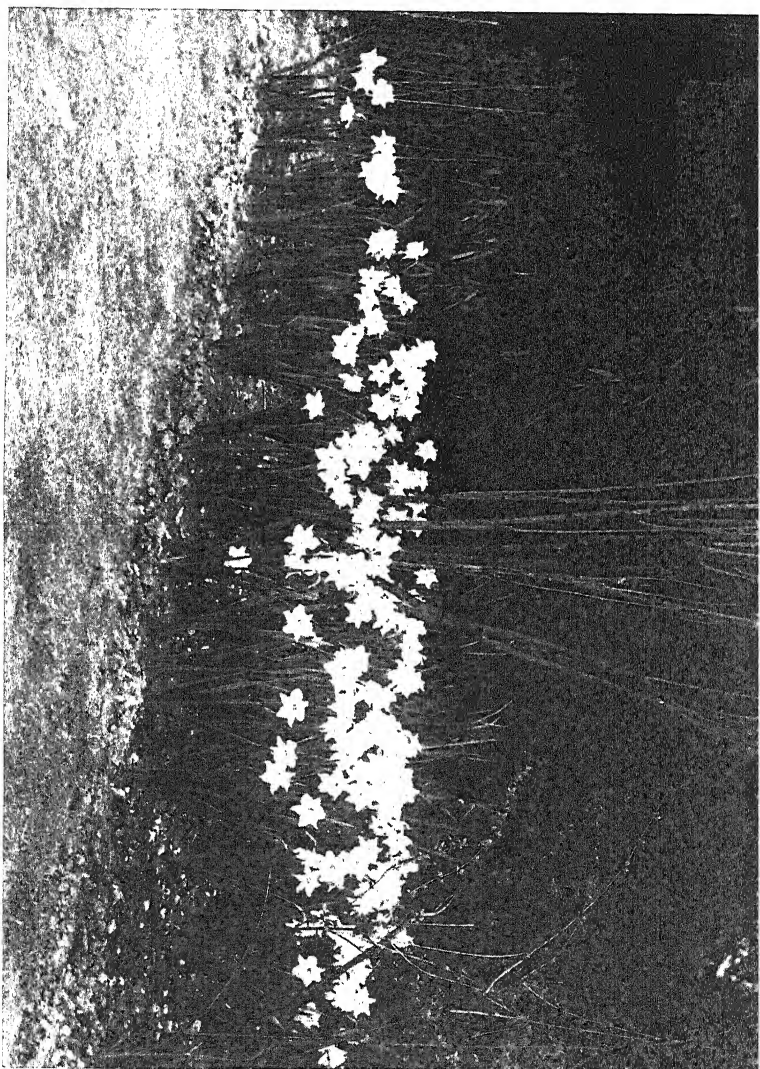


FIG. 83.—NARCISUS 'TUNIS' AT WISLEY.  
(p. 310)

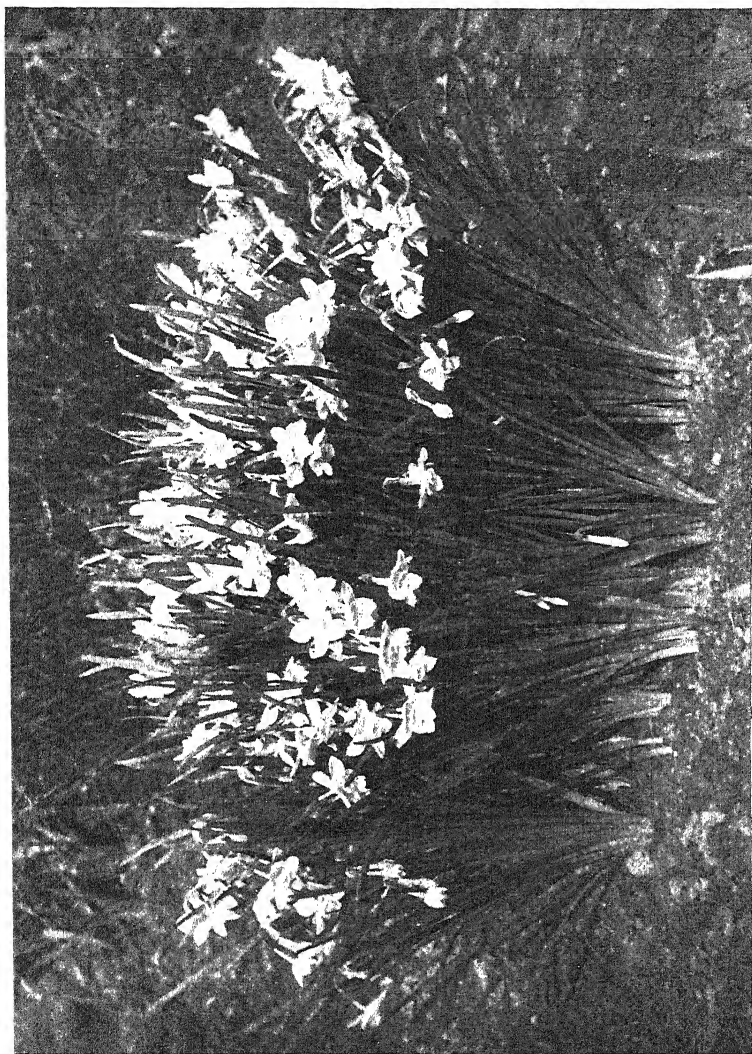


FIG. 84.—NARCISSUS 'TREVITHIAN' AT WISLEY.  
(p. 313)



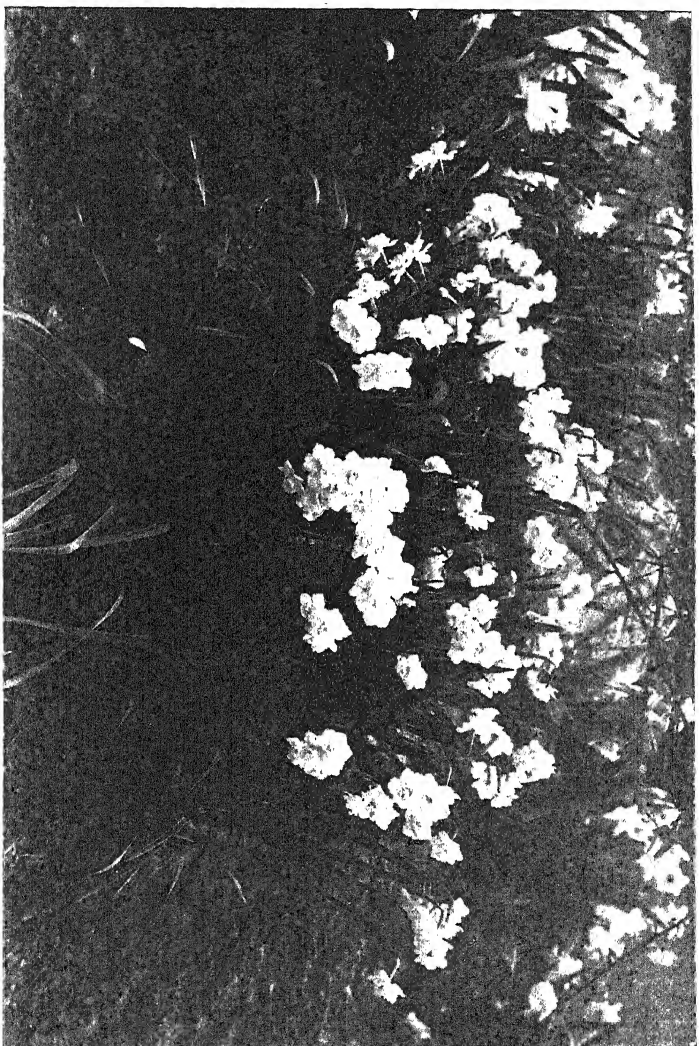


FIG. 85.—NARCISUS 'CHEERFULNESS' AT WISLEY.  
(p. 315)

[To face p. 311.]



stem,  $3\frac{1}{4}$  inches wide; perianth flat, overlapping, white; corona  $1\frac{1}{2}$  inch deep, funnel-shaped, pale cream. Flowers (from 10 bulbs) 35 in third year. (A.M. for gardens 1930.)

**GRAYLING, A.M.** Raised by Mr. P. D. Williams, sent by Mr. A. M. Wilson. Flowering from April 2 to May 4. Flower  $4\frac{1}{4}$  inches wide on a stem of 20 inches; perianth flat, overlapping, creamy-white; corona  $1\frac{1}{5}$  inch deep, funnel-shaped, clear sulphur, margined white. Flowers in first year 26, in third 74. (A.M. for gardens 1931.)

**HERA, A.M.** Raised by Messrs. de Graaff, sent by Messrs. Barr. Flowering began April 21, ended May 11. Foliage 22 inches, stem 26 inches long. Flower  $3\frac{5}{8}$  inches wide, inclined to droop; perianth  $1\frac{3}{8}$  inch long, flat, overlapping, white; corona  $\frac{7}{10}$  inch deep, funnel-shaped, white. Flowers 27 in first, 83 in third year.

**MITYLENE, A.M.** Raised by Mr. Engleheart, sent by Messrs. Cranfield and Richardson. Flowering began April 14, ended May 13. Foliage drooping, stem 18 inches. Flower 4 inches wide; perianth flat, overlapping, white; corona  $\frac{4}{5}$  inch deep, broadly funnel-shaped, sulphur. Flowers in first year 25, in third 52. (A.M. for gardens 1931.)

**MILKMAID, H.C.** Raised by Mr. P. D. Williams, sent by Mr. A. M. Wilson. Flowering from April 2 to May 4. Stem 20 inches. Flower  $4\frac{1}{4}$  inches wide; perianth flat, overlapping, white, cream tinged; corona  $1\frac{1}{2}$  inch deep, funnel-shaped, cream passing to waxy white. Flowers 23 in first, 45 in third year. (H.C. for gardens 1930.)

**SEA SHELL, H.C.** Raised by Mr. Engleheart, sent by Mr. Cranfield. Flowering began April 21, ended May 18. Foliage drooping at tips, 18 inches long, stem 24 inches. Flower  $4\frac{5}{8}$  inches wide, inclined to droop; perianth 2 inches long, flat, overlapping, pure white; corona  $\frac{3}{4}$  inch deep, basin-shaped, margin entire sulphur. Flowers in first year 45, in third 53.

**STOLBERG, H.C.** Raised by Messrs. van Tubergen, sent by Messrs. Barr. Flowering from April 3 to May 4. Stem 15 inches. Flower drooping,  $3\frac{1}{5}$  inches wide; perianth flat, overlapping, white; corona  $1\frac{1}{10}$  inch deep, tubular, cream. Flowers 22 in first, 46 in third year. (H.C. for gardens 1930.)

**WHITE MAIDEN, H.C.** Raised by Dr. Lower and sent by Mr. P. Lower. Flowering began April 27 and ended May 13. Foliage 20 inches long, erect, stem 24 inches long. Flower 4 inches wide, inclined to droop; perianth  $1\frac{1}{2}$  inch long, flat, overlapping well, pure white; corona  $\frac{7}{10}$  inch deep, basin-shaped, pale creamy-sulphur with white edge, fading to creamy-white. Flowers 36 in first, 69 in third year.

**GIRDLE, C.** Raised and sent by Mr. Watts. Flowering from April 6 to May 8. Flower  $3\frac{3}{4}$  inches wide, slightly drooping, on 16-inch stem, creamy-white; perianth flat, overlapping, corona  $1\frac{1}{8}$  inch deep, beaker-shaped. Flowers 30 in first, 74 in third year.

**MAY, C.** Raised and sent by Mr. Watts of St. Asaph. Flowering began on April 9 and continued until May 6. A vigorous plant with erect grey-green foliage 20 inches long, and a stem of 24 inches. Flower

$4\frac{1}{4}$  inches wide, inclined to droop, creamy-white with pale sulphur edging to the frilled trumpet ; perianth  $1\frac{3}{4}$  inch long, flat, overlapping ; trumpet  $1\frac{5}{8}$  inch. Flowers in first year 46, in third 74.

**SNOW QUEEN, C.** Sent by Messrs. R. A. Vanderschoot. Flowering began April 14, ended May 13. Foliage 16 inches, stem 22 inches long. Flower 4 inches wide ; perianth  $1\frac{3}{4}$  inch long, flat and overlapping, white ; corona  $\frac{5}{8}$  inch deep, funnel-shaped, creamy-white with pale cream buff edge, quickly discolouring. Flowers 25 in first, 37 in third year from 15 bulbs.

**WHITE DELIGHT, C.** Raised and sent by Messrs. Bath. Flowering from April 6 to May 4. Foliage and stem 22 inches long. Flower  $4\frac{1}{4}$  inches wide ; perianth  $1\frac{3}{4}$  inch long, flat, overlapping, creamy-white ; corona  $1\frac{5}{8}$  inch deep, funnel-shaped, pale cream. Flowers 26 in first, 84 in third year.

Other varieties belonging to Division 4a included in the trial were ALBAN (Cranfield), BRUNEILDE (Barr), CONTRAST (Bath), GERTIE MILLAR (de Graaff-Gerharda), GLADYS BIBBY (Watts), H. C. BOWLES (Cranfield), HELMET (Cranfield), HON. MRS. J. L. FRANCKLIN (Pearson), HYMETTUS (G. L. Wilson), KINGDOM (de Graaff-Gerharda), LEAH (Barr), LORD KITCHENER (Cranfield, Barr), OZAN (A. M. Wilson), PHYLLIDA (Bath), SILVER DAWN (Bath), SILVER FOX (Cranfield), SWEET NELL (Barr), TANTALUS (Watts), THORDIS (Pearson), VIRGILIA (Barr), WHITE EMBLEM (de Graaff-Gerharda), WHITE NILE (Barr).

DIVISION 4b—varieties with white or nearly white perianth and corona, the latter less than one-third as long as the perianth segments—was a small group in the trials, and neither of the five varieties received an award.

The varieties in the trial were LAUGHING WATER (Barr), MYSTIC (G. L. Wilson), QUEEN OF THE NORTH (Cranfield), SIMPLE (Watts), WHITE CITY (de Graaff-Gerharda).

DIVISION 5 contains hybrids of *Narcissus triandrus* as an obvious ancestor. There are two subdivisions : (a) varieties with the cup shorter than the perianth pieces, but at least one-third their length ; and (b) varieties with the cup less than one-third the length of the perianth segments.

DIVISION 5a was represented by two varieties, of which one was Highly Commended.

**NIVETH, H.C.** Raised by Mr. H. Backhouse and sent by Mr. G. L. Wilson. Flowering from April 14 to May 15. Foliage 15 inches long, stem two-flowered, 16 inches long. Flower 3 inches wide, white, drooping ; perianth  $1\frac{5}{8}$  inch long, flat, overlapping ; corona  $\frac{4}{8}$  inch deep, cup-shaped. Flower stems 22 in first, 39 in third year.

The other variety in this Division was ST. MADEN (Barr).

DIVISION 5b—*triandrus* hybrids with corona less than one-third of perianth segments—was represented by SNOWBIRD (Barr) only.

DIVISION 6 consists of hybrids with *Narcissus cyclamineus* as one of the parents; it was represented by two varieties, both of which received the Award of Merit.

**BERYL, A.M.** Raised and sent by Mr. P. D. Williams. The Award is for the variety as a rock-garden plant. Flowering from March 30 to May 1. The channelled foliage is bright blue-green, stem 16 inches long, flower somewhat drooping, 3 inches in diameter; perianth reflexed, segments incurved, primrose; corona  $\frac{3}{8}$  inch deep, funnel-shaped, pale orange, deep at mouth. Flowers 34 in third year. (A.M. for rock garden 1927.)

**ORANGE GLORY, A.M.** Raised by Messrs. de Graaff, sent by Messrs. Barr. Flowering from March 30 to May 1. Stem about 14 inches. Flower  $3\frac{1}{8}$  inches wide, perianth reflexed, pointed, buttercup-yellow; corona  $1\frac{1}{2}$  inch deep, beaker-shaped, bright orange. Flowers 21 in first, 67 in third year.

DIVISION 7. Here come the hybrids of *Narcissus Jonquilla*, mostly strongly scented. Eight varieties of this Division were included, and three First Class Certificates and three Awards of Merit were bestowed.

**GOLDEN SCEPTRE, F.C.C.** Raised by Messrs. de Graaff and sent by Messrs. Barr. Flowering from April 2 to May 15. Foliage flat, stem 19 inches. Flowers at times in twos,  $2\frac{3}{4}$  inches wide; perianth overlapping, buttercup-yellow; corona 1 inch deep, tubular, bright buttercup-yellow. Flower stems 28 in first, 79 in third year. (C. for gardens 1931.)

**LANARTH, F.C.C.** Raised and sent by Mr. P. D. Williams. Flowering March 30 to May 13. Foliage deeply channelled; stem 24 inches long. Flowers in twos,  $2\frac{3}{4}$  inches wide, flat, overlapping, clear buttercup-yellow, corona  $\frac{1}{2}$  inch deep, cup-shaped, bright orange. Flower stems 25 in first year, 58 in third. (A.M. for gardens 1930.)

**TREVITHIAN, F.C.C.** Raised by Mr. P. D. Williams, sent by Mr. A. M. Wilson. Flowering from April 2 to May 4. Foliage dark green, rush-like; stem 20 inches. Flowers in twos or threes,  $2\frac{1}{2}$  inches wide; perianth flat, overlapping, clear buttercup-yellow; corona  $\frac{2}{8}$  inch deep, tubular, rich clear buttercup-yellow. Flower stems 24 in first, 79 in third. (A.M. for gardens 1931.) (Fig. 84.)

**AURELIA, A.M.** Raised and sent by Messrs. Barr. Flowering began April 21, ended May 18. Foliage flat, greyish-blue, 20 inches, stem 22 inches long. Flowers sometimes in twos, 3 inches wide, deep rich lemon-yellow, the corona somewhat darker; perianth  $1\frac{3}{10}$  inch long, flat, overlapping; corona 1 inch deep, funnel-shaped. Flower stems 24 in first year, 61 in third.

**HESLA, A.M.** Raised and sent by Mr. P. D. Williams. Flowering from April 14 to May 13. Foliage channelled, 20 inches long, stem 22 inches. Flowers sometimes in twos,  $3\frac{1}{2}$  inches wide, clear rich primrose with the corona a shade darker; perianth  $1\frac{5}{8}$  inch long, flat, overlapping; corona  $\frac{1}{2}$  inch deep, basin-shaped. Flower stems 24 in first, 57 in third year.

**YELLOW PRIZE, A.M.** Raised and sent by Messrs. R. A. Vander-schoot. Flowering from April 29 to May 18. Foliage flat, 16 inches long, stem 22 inches long. Flowers at times in twos, 3 inches wide; perianth  $1\frac{1}{8}$  inch, flat, overlapping; clear rich sulphur-lemon; corona  $\frac{5}{8}$  inch, basin-shaped, pale yellow. Flower stems 22 in first, 58 in third year.

The other varieties in this Division were **BEAUREGARD** (Barr), **SOLLERET** (Cranfield).

**DIVISION 8.** Tazetta or bunch Narcissi, flowers two or more on a stem.

Six varieties of this Division were included in the trials. One received the First Class Certificate, one the Award of Merit, and one was Highly Commended.

**SCARLET GEM, F.C.C.** Raised by Mr. P. D. Williams, sent by Messrs. Bath. Flowering from April 3 to May 4. A very vigorous plant, foliage 18 inches, stem 24 inches long. Flowers in fours to sixes,  $1\frac{7}{8}$  inch wide; perianth  $\frac{7}{8}$  inch wide, flat, overlapping, primrose; corona  $\frac{1}{2}$  inch deep, saucer-shaped, orange-scarlet. Flower stems 26 in first, 79 in third year.

**GLORIOUS, A.M.** Raised by Mr. J. C. Williams and sent by Mr. Richardson. Flowering from April 14 until May 8. Foliage drooping, stem 18 inches long. Flowers in pairs or threes,  $2\frac{5}{8}$  inches wide; perianth overlapping, satiny creamy-white tinged amber at base; corona  $\frac{1}{4}$  inch deep, funnel-shaped, orange-scarlet fading at the edge. Flower stems 50 in first year. (H.C. for gardens 1927.)

**WHITE'S HYBRID, H.C.** Sent by Messrs. de Graaff-Gerharda. Flowering from April 14 to May 13. Foliage erect, stem 24 inches long. Flowers in threes,  $2\frac{5}{8}$  inches wide; perianth  $1\frac{1}{4}$  inch long, flat, overlapping, creamy-white; corona  $\frac{1}{8}$  inch deep, basin-shaped, deep yellow with a narrow edge of scarlet. Flower stems 20 in first, 64 in third year.

Other varieties belonging to Division 8 in the trials were **HALVOSE** (P. D. Williams), **ST. MERRY** (P. D. Williams), **XENOPHON** (Watts).

**DIVISION 9.** Poeticus varieties. Ten varieties belonging to Division 9 were included. Three varieties were Highly Commended, one was Commended.

**CRUSOE, H.C.** Raised by Mr. Cranfield, sent by Mr. Barr. Flowering April 27 to May 15. Foliage grey-green, drooping at tips, stem 16 inches long. Flower inclined to droop,  $2\frac{4}{5}$  inches wide; perianth  $1\frac{3}{10}$  inch long, flat, overlapping, white; corona  $\frac{1}{8}$  inch deep, saucer-shaped, sulphur-buff, scarlet edged. Flowers 26 in first, 59 in third year.

**FAIR LADY, H.C.** Raised by Mr. Engleheart, sent by Messrs. Bath. Flowering April 14 to May 13. Very vigorous with a stiff 18-inch stem. Flower  $2\frac{1}{2}$  inches wide; perianth somewhat reflexed and overlapping, white, base cream; corona  $\frac{1}{10}$  inch deep, saucer-shaped, sulphur edged scarlet. Flowers 26 in first, 99 in third year. (A.M. for gardens 1931.)

**SARCHEDON, H.C.** Raised by Mr. Engleheart, sent by Messrs. de Graaff-Gerharda. Flowering from April 27 to May 18. Foliage 16 inches, stem 24 inches long. Flower  $3\frac{1}{2}$  inches wide; perianth  $1\frac{5}{8}$  inch wide, flat, overlapping, pure white; corona  $\frac{1}{8}$  inch deep, sulphur edged scarlet. Flowers 13 in first, 82 in third year.

**CAEDMON, C.** Raised by Mr. Engleheart, sent by Messrs. Barr. Flowering from April 29 to May 18. Stem 18 inches. Flower  $2\frac{3}{10}$  inches wide, overlapping, white with sulphur base; corona  $\frac{1}{10}$  inch deep, saucer-shaped, greenish-lemon edged bright red. Flowers 21 in first year, 41 in third.

The other varieties in this section were **ANACREON** (Cranfield), **ARTHUR COLLINS** (Chapman), **MILLIE PRICE** (Barr), **RHAPSODY** (Bath), **SARABANDE** (Bath), **WALTER EVANS** (Lower).

**DIVISION 10.** Double varieties. Thirteen double varieties of various types were planted in the trials, two of which received the Award of Merit, two were Highly Commended and one Commended.

**CHEERFULNESS, A.M.** Raised by Messrs. Vanderschoot, sent by Messrs. Barr. Flowering began April 22, ended May 18. Stem 17 inches. Flowers in twos or threes,  $2\frac{1}{4}$  inches wide; segments flat, white, corona deep yellow and white,  $\frac{5}{8}$  inch deep. Flower stems 9 in first, 65 in third year. (H.C. for gardens 1926.) (Fig. 85.)

**MARY COPELAND, A.M.** Raised by Mr. Copeland, sent by Messrs. de Graaff-Gerharda. Flowering from April 21 to May 15. Foliage 16 inches long, stem 22 inches. Flowers borne singly,  $3\frac{3}{4}$  inches wide with flat incurving segments, pale cream sulphur at base, coronal segments orange, broadly edged orange-scarlet. Flowers (from 20 bulbs) 30 in 1936.

**BUTTERMILK, H.C.** Sent by Messrs. Bath. Flowering began April 2, ended May 4. Flowers borne singly on stiff, erect, 19-inch stems,  $3\frac{3}{4}$  inches wide. Perianth segments  $1\frac{3}{8}$  inch long, flat, pointed, creamy-white; coronal segments  $\frac{3}{4}$  inch deep, sulphur-buff. Flowers 22 in first, 42 in third year.

**FEU DE JOIE, H.C.** Raised by Mr. Copeland, sent by Messrs. Bath. Flowering from March 30 to May 1. Foliage drooping in upper half, stems 24 inches. Flowers borne singly, 5 inches wide; perianth segments  $2\frac{1}{4}$  inches long with recurving margins, creamy-white; corona  $\frac{3}{4}$  inch deep, pale orange deeper at margin. Flowers 46 in first, 59 in third year.

**MILK AND HONEY, C.** Raised by Mr. Copeland, sent by Messrs. Barr. Flowering began April 9, ended May 8. Foliage glaucous, 21 inches long, stem 20 inches, flowers borne singly, 4 inches wide; perianth 2 inches long, slightly twisted, white; corona  $\frac{3}{4}$  inch deep, sulphur. Flowers 18 in first, 53 in third year.

Other varieties in Division 10 were **AMIDONETTE** (de Graaff-Gerharda), **APRICOT PHOENIX** (de Graaff-Gerharda), **DOUBLET** (Watts), **INGLESCOMBE** (de Graaff-Gerharda), **LLINOS** (Watts), **LUNE DE MIEL** (Barr), **THE PEARL** (Barr, de Graaff-Gerharda), **TWINK** (Barr).

## BOOK REVIEWS.

"The Identification of Trees and Shrubs." By F. K. Makins, F.L.S. 8vo. 326 pp. (Dent, London, 1935.) Price 15s.

The author, who is Instructor in Botany in the Forest College, Dehra Dun, India, has attempted to provide a convenient volume which will enable those without previous botanical knowledge to identify "any tree or shrub he is likely to meet with, growing in the open in any part of the British Isles." This is a most laudable object, since there is no such book in existence at present, but in our opinion, despite Mr. Makins' industry, he has not succeeded in attaining it.

The method used is based on foliage characters, the enquirer first consulting the key on p. 12, proceeding thence to the appropriate group of diagrams from which he endeavours to select his plant. From there he refers to the Index in order to check the specimen by a brief description, these occupying pp. 143 to 311, including seven pages of Additions and Corrections.

The figures are an important part of the work, since to the uninitiated they offer the easiest means of recognizing an unknown plant. Their worth here is greatly reduced by the fact that there is neither scale nor indication of size in any example (e.g. Fig. 26, where *Viburnum Opulus* and *Paulownia imperialis* are shown side by side), excepting relative descent from the largest to the smallest. The author's statement on p. 1, that "the illustrations are somewhat diagrammatic," is not calculated to inspire with faith the seeker after knowledge. That they are so is borne out by such as the selection of *Rhododendrons* (Fig. 123), or *Ericas* (Fig. 48), and of the *Berberis* (Figs. 79, 80) amongst others. In many cases the exigencies of space have compelled too much crowding to enable the figures to be specifically definite, although some such as the Oaks, Maples, *Viburnums*, and *Olearias* have been better treated in this respect.

The range of plants chosen for inclusion is too wide, including a large proportion seldom or never cultivated outside botanic gardens or very large collections, or which are only hardy in the most highly favoured places. The omission of others of real garden worth is also notable, and we find no mention of *Magnolia Wilsonii*, *Azara lanceolata*, the hybrid *Eucryphia Nymansay*, *Osmanthus Forrestii*, *Forsythia ovata*, and *Rhododendron Vaseyi*, to mention but a few. While *Poplars* receive generous treatment, to the extent of twenty-four names, and ten *Acanthopanax* and six *Coprosmas* are described, *Sorbus* is confined to five species and one hybrid, *Amelanchier* to two, *Mutisia* to one, and the genera *Diervilla*, *Gaultheria*, *Pernettya*, *Deutzia*, and *Philadelphus* might well be given greater consideration.

The author would have earned our gratitude if, in the interests of uniformity and accuracy in nomenclature, he had adhered to that of the Kew "Hand-List of Trees and Shrubs," giving in brackets where necessary any commonly-used synonym. The spelling of botanical names in several instances should receive attention, while the use of italics in the otherwise excellent Index would be an advantage where synonyms and English names are concerned.

Mr. Makins has cast a wide net into somewhat uneasy waters, bringing a sample of what we may confidently look for in the future, but a more discriminating mesh will have to form an essential part of the equipment if the gardening fraternity is to profit by his labour.

B. O. MULLIGAN.

"Pruning and Planting Guide." Ed. by M. Thompson. Sm. 8vo. 133 pp. (Garden Publications Ltd., 1935.)

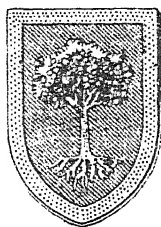
This little book contains directions on How to Sow Seed, Planting Details, Plant Selection Lists, Roses, Shrubs, Trees, Fertilizers, Lawns. Much information is packed into a small space and it is on the whole reliable.

Probably no two people would make the same selection of shrubs, etc., for planting, and this is as it should be. The lists may be used as suggestions therefore, bearing in mind that many good plants do not appear in them.

In some instances directions for propagation differ from those usually and best employed. Tools for hedge pruning should include the machines available.

# JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

Vol. LXI



Part 8

August 1936

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## RHODODENDRONS.

By O. C. A. SLOCOCK, F.R.H.S.

[Read June 9, 1936 ; Mr. W. R. OLDHAM, J.P., in the Chair.]

THE ideal position for Rhododendrons is, of course, in a wood where the leaf mould lies thick on a cool sandy acid soil, with sufficient shade to break the sun's rays and sufficient shelter from storms, wind and snow, a Gulf Stream climate, and no spring or autumn frosts.

Such an ideal can only be approached in the western parts of our island, and even from these woods we hear tales of woe of the ravages that the last two seasons have wrought.

Obviously there is a greater variety of plants available to those lucky people who have their gardens in these places.

However, it is not, thank goodness, impossible for those who live in any part of our country, and who are situated on what is technically termed an acid soil, which practically means a soil free from lime or chalk, to grow Rhododendrons of merit.

Amateurs and professionals have for years, by hybridization, and from trials of collected seed, added to a fast increasing list of plants which can be called hardy. When I use the word "hardy," I should qualify it by saying that they are hardy enough to give satisfaction under normal conditions in the inland counties where frosts of 15 to 20 degrees are quite common.

In considering plants for gardens in such localities as these, we first of all have to decide whether we are able or want to plant in woodland or in an open border.

There is a very noted open border in a nursery which was responsible for raising a number of the old hardy hybrids. That

border still exists to-day, and is magnificent. I refer, of course, to the Knap Hill Nursery, which under the name of ANTHONY WATERER sent out a magnificent collection of old hybrids.

They probably represent some of the toughest Rhododendrons in the world. Frost, drought and wind leave them unharmed; and year after year they give one of the finest shows that can be seen anywhere.

Although many of these Rhododendrons are marked with Y's and Z's in the Rhododendron Year Book, there are still some which are considered as among the best hardy hybrids to-day.

What strikes one most in viewing this border at Knap Hill is that had these plants been planted in a shady position they would not exist to-day in the same perfect specimens as they are. They would have become straggly and out of shape.

*Planting.*—But before we go into the question of varieties, let us first consider position and planting.

It is essential before planting Rhododendrons in any soil whatever to have a generous supply of rotted leaf mould or peat handy, as it is upon this that Rhododendrons feed. Without it they quickly become poor, starved, and unable to flower. It is also advisable to get some old rotten farmyard manure, and if possible some dead bracken or cut heath, or some similar shading material.

With these at hand, let us now imagine that we are preparing to plant an area of ground with Rhododendrons. It is probable that this will be near some taller trees, a site usually chosen not only because Rhododendrons like this position, but because normally other plants do not, and therefore they have to go there.

It is obvious that if we just dig a small hole deep enough to take the ball or root of the plant, and only pack a little leaf mould and manure around it, putting the earth back again around the top, the plant will in the first dry weather exhaust all the water from its ball and also from the leaf mould; and the taller trees around will see to it that it gets no more supplies of food or water. The big trees, being there first, very quickly oust the newcomer in competition for these.

Therefore the ground must be properly broken, trenched, and the roots of the big trees (which may travel almost as far underground as the tree is high) removed.

The worst offenders are elm trees. Their fine roots penetrate the Rhododendron ball and take all its nutrition. The only way to keep back a bank of elm roots successfully is to dig a trench and sink some old corrugated iron in the ground. It takes years before they are able to break their way through this.

When the trench has been opened, and before putting the top spit of the next trench back, it is wise to have the bottom of the trench broken up with a fork. This has a twofold effect. It will enable water to get away in a wet season, and it will also enable capillary water to rise in the dry weather.



Having done this, put the cow manure in the bottom of the trench—this will be about 18 inches below the surface of the ground.

You will quickly say, no doubt, "What is the use of putting cow manure so far below the ground, when Rhododendrons are shallow-rooting plants?" I will explain this a little later.

Next comes the top spit, and then another mingled with the bottom spit of the unbroken ground. On the top you mix your leaf mould.

When the ground has been treated in this way, then you are ready to plant. Incidentally it is wise to make this preparation a good time before planting, so as to allow the soil to settle down; but if the soil is light this is not essential.

A hole should be dug in the new broken ground, and the Rhododendron put into it. If the weather is at all dry, it is wise to dip the plant before putting it in, as doing so will save time in endeavouring to get water into the ball later on.

A little extra leaf mould, mixed with hop manure if possible, should be scattered around it, and the earth put back. On no account should the ball be more than 3 inches under the surface, and if the ground is inclined to lie wet all through the year, it is wiser to cover it with only a very light layer of soil.

Then walk firmly round the plant, so that every part of the ball is quite firm with the surrounding soil. It is quite common, even, I am afraid, among professional gardeners, not to do this part of the job properly. The plant cannot be expected to start rooting into fresh soil if the root is not in firm association with it!

Now comes the bracken, or other covering.

This should be put around the top of the ground to prevent it drying out, and to prevent it getting hot from the sun's rays.

This may sound a very complicated job, but really it is not so bad when one gets the hang of it, and you are amply repaid for the trouble you have taken.

You will find that in the driest summers your plant will still be getting nourishment from the moisture coming up—carrying with it ingredients of the manure which will keep it healthy and encourage your Rhododendron to root downwards. It will also send out fibre into the leaf mould around, and keep itself healthy in wet seasons. Never let the ground become trodden and hard during the growing season.

It was noteworthy that in the last two dry seasons it was the old plants, established for years, and those plants which were planted in badly cultivated ground, that had to be continually watered otherwise they died altogether; and it was with great interest that I watched a long drift of Rhododendrons planted in a manner such as I have just described—on ground of a light sandy nature—which held their leaves aloft, made good growth, and set flower buds without being shown a drop of water.

A great many people have made a practice (just as I have described before) of digging a small hole, putting in a little leaf mould, and leaving the plant to fight it out. I agree that in ideal woodland these people will meet with a considerable measure of success in good seasons, but we know from experience that we cannot rely on these methods, and I have seen some sorry sights after the last drought.

You will also find that by putting a little fern around the bottom branches of the plant you will minimize the chances of the bark being split by either a late spring or early autumn frost.

### SPECIES.

Having prepared the ground for your Rhododendrons, the next problem which presents itself is obviously the selection of varieties.

There are many thousands of species, sub-species and hybrids which have found their way into this country. From them the gardener has a difficult job to decide which plants are most suited to his taste and to his garden.

I do not wish to give merely a list of plants. The Rhododendron Association has published a book with a description of all the species, with stars denoting their merit, and letters to show the degree of hardness.

Time permits us to consider only a very few species. I have, however, marked a short list. First of all the earlier Rhododendrons, that is, those which flower before May, and a second list of those which flower afterwards. I wish to mention these plants as either I consider them to be of particular garden merit, or they have been responsible for some valuable garden hybrids.

The first plant I have on the list is *Rhododendron arboreum*. This species, which is tender in most gardens in this country, can, however, be planted in its pink and white forms under the trees in almost all gardens here. Its more exciting forms are vivid scarlet, but these are tender to a degree beyond which prudence allows us to plant in our inland gardens.

It is interesting to see how *R. arboreum* introduced into this country have grown. Nearly always they have formed one or two main leaders similar to Cupressus. These will continue to grow upwards, the flower buds being borne only on the side-branches. Quite often the plant puts on 2 feet of growth during a year under favourable conditions. Eventually a bud is formed on the main stem and this marks the ultimate height to which the plant attains. When this is reached it will become stunted and eventually flower itself to death.

The plants, however, are very long lived, a factor which is transmitted to their hybrids—one of the most noted of which is 'Lady Eleanor Cathcart' (*arboreum*  $\times$  *maximum*).

Closely allied to this plant is *R. cinnamomeum*.

*R. cinnamomeum* is a pure white Rhododendron which grows into a well-shaped bush, and is perfectly hardy in any part of this country.

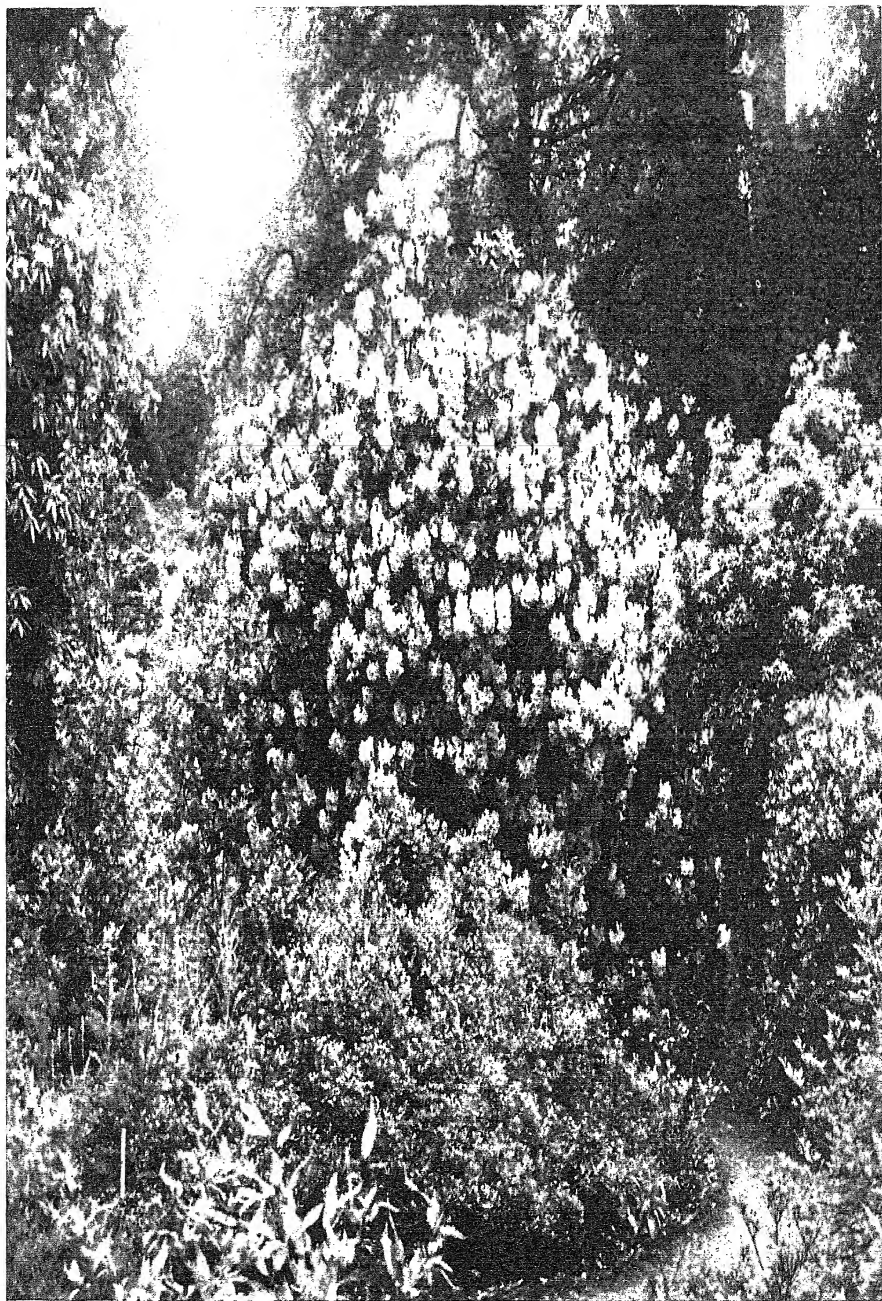


FIG. 86.—RHODODENDRON PINK PEARL AT WISLEY, 1936.

[To face p. 320.



FIG. 87.—*PAEONIA CAMBESSEDESII* AT WISLEY, IN THE TEMPERATE HOUSE.

*R. Augustinii* is noted for its intense violet-blue flowers. We cannot pretend that it is a hardy Rhododendron, but because it succeeds in some seasons in our inland gardens it is well worth planting. The largest and bluest forms, unfortunately, are the most tender, but there is a grey-blue form with a green eye, and also a blue form with red stamens, which have been selected by growers as being fairly hardy. The young foliage of *R. Augustinii* is attractive.

*R. barbatum* is one of the most intensely scarlet of all Rhododendrons and it flowers very early. The difficulty of this plant is, that if it is put in too much shelter it will not bud; but if there is sufficient room in a garden it is always worth planting on the chance that it will flower, say, one year in every three. Its brilliance at the end of March is worth a ton of flowers in June.

It is interesting to note in passing that this Rhododendron in one of its crosses has thrown an albino in the pure white 'Duchess of Portland,' raised by FISHER, SON & SIBRAY.

*R. basilicum* has large leaves which will, perhaps, rival those of *R. sinogrande* under ideal conditions. With this I have bracketed *R. Hodgsonii*, *R. Bureavii*, *R. fulvum*, and *R. grande*—not that there is any botanical association between these plants, but they represent some of the only large-leaved species which are worth growing, and can be grown for their foliage in inland positions.

*R. calophytum* and *R. sutchuenense* are two fine foliage Rhododendrons which flower in early April. If you can afford room for them, certainly plant them, as we have experienced good results from these Rhododendrons in spite of frost. Their foliage is good to look at the whole year through, and one great point in their favour is that although they flower early, their growth is comparatively late. In fact, it is interesting to note that this year they have grown even later than *R. × Loderi*, which flowers the first week in May and whose growth appears as the flowers open.

In Woking, *R. × Loderi* has had its growth cut by frost, whereas *R. sutchuenense* and *R. calophytum* have remained immune.

*R. neriiflorum*, *R. haematodes* and *R. sperabile* are three Rhododendrons I have bracketed together as they grow to a similar height (about 4 to 5 feet) and flower in mid-April a brilliant waxy scarlet. To see a planting of these in a clearing in a wood is to look at one of the most brilliant colourings afforded by any Rhododendron. However, these plants are apt to be bud-tender, and the early autumn frosts sometimes rob the spring of this magnificent show.

In passing, it is worth noting that the natural hybrid between *R. neriiflorum* and *R. haematodes* has flowered consistently at Woking for the last four years, whereas the two parents have not only not flowered, but have been killed by frost almost to a plant.

Mr. ROTHSCHILD has raised a seedling between two types of *R. Augustinii* which also appears hardier than either of its parents. This same hardiness which is shown in mongrels is much in favour of crossing some of our most beautiful Rhododendron species.

We cannot pass by *R. lacteum*. As an individual truss it is certainly the most beautiful yellow Rhododendron that can be put on a show bench. However, I do not wish (as not being a possessor of a specimen of *R. lacteum*) to belittle its merits, but it appears that this plant requires to develop into a large tree before it shows any inclination to flower; and the plants that I have seen in flower do not give the display of many of the paler yellow hybrids.

It is not to this plant that I look for our future best yellow Rhododendrons.

*R. mucronulatum*, which is closely allied to *R. dauricum*, the parent plant of our most popular early *R. × praecox*, is of a vivid violet-purple. The plant itself is perfectly hardy, and for a week or two, like the autumn-flowering cherry, if one crop of flowers become frozen, another one appears quickly to take its place; and no matter how bad the winter and spring may be, the plant is always ready to flower again next year.

It is unfortunate that there is no hardy pale yellow Rhododendron to flower at the same time as there is with *R. × praecox*, when *R. lutescens* gives such vivid contrast. *R. lutescens* is, unfortunately, not nearly so hardy as its hybrid companion, but if it is planted further back in a more sheltered position, with *R. × praecox* in front of it, it gives a show worthy of planting even for success in alternate years.

*R. oreodoxa* is very early, and for some reason exhibits an extraordinary characteristic of bud-hardiness which is not shown to the same extent in any other Rhododendron. I have known frost of 15 and 20 degrees when this plant has been in flower. The flower fully open naturally falls to pieces, but when the frost is finished, those in bud come out as if nothing had happened.

This plant should be put if possible amongst such cover as is afforded from the large *R. ponticum*, or other thick bushes. It will grow to a considerable height, but when it is large it is advisable to pick off some of the buds. In fact, all the Fortunei series with the exception of *R. discolor* are apt to overflow themselves in mature specimens.

For those Rhododendrons which flower after the mid-season, or, shall we say, after the date which is predominant to amateurs and professionals, May 1, because it denotes approximately the day of the Rhododendron Show, we come to those plants which are responsible for the best of our garden hybrids, although the species in many cases are well worthy of a place in any garden.

Let us start with *R. auriculatum*. This plant is the latest flowering of all Rhododendrons. Its large white scented lily-like flowers appear at the end of July, and sometimes in August. It is bone-hardy, but it is advisable to plant it where the sun's rays will not scorch the flowers and the young growth which comes after them at usually the hottest period in our climate.

If raised in quantity, I consider this plant would be the finest covert-planting Rhododendron that can be offered.

Most of the seedlings of *R. auriculatum* have flowers which do not withstand weather. The crosses, however, with some of the old hardy hybrids such as 'Prometheus' and 'Mrs. R. S. Holford' give a late race of rose-pink Rhododendrons which are valuable in prolonging the flowering period of coloured Rhododendrons.

The first cousin to *R. auriculatum* is *R. Griersonianum*, described as a geranium scarlet. Perhaps this description gives rather too vivid an impression of the flower. It has all the qualities of the geranium in colour, but at the same time there is a softer tone which makes it more pleasant to look at. There is no doubt that this plant is a great deal hardier than is sometimes supposed, but it is a difficult plant.

There are several Rhododendrons, for instance *R. facetum* and *R. eriogynum* and their hybrids, which are greedy feeders, and the result of their greed is to render them soft and an easy prey to the first frost in the autumn.

Plants of *R. Griersonianum* which were treasured and planted in the best Rhododendron soil were killed to the ground, whereas those planted in poor soil not only have continued their existence, but have flowered and set seed—even those subjected to 20 degrees of frost. This plant also appears to be slightly xerophytic, and therefore seems to be wisely planted in the poorer and drier part of the garden, and without manure.

Our hybridists have jumped at this Rhododendron, in some cases with disastrous effects, but there is no doubt that there will in time be progeny which will take up a lasting position among the most vivid coloured hybrids.

*R. campanulatum*, which, in its bluest form, is one of the bluest of the larger-flowered Rhododendrons and which has been improved upon in some of its seedlings, is well planted with yellow species and hybrids which flower at the same time. I have noted plantations of these plants with bluebells, which are a great relief after the usual reds and pinks. The best form of the actual species was sent out by the Knap Hill Nursery many years ago, and they still stock this plant.

*R. campylocarpum* and its various associates such as *R. Wardii*, *R. astrocalyx*, etc., have given the opportunity of introducing an entirely separate range of colours into what are referred to as hardy hybrids. The species themselves do better in the drier parts of the country than on the west coast. In damp climates not only the flower buds but even growth buds are apt to rot.

These plants have been crossed, and are still being hybridized by those who are aiming at a perfect hardy yellow hybrid.

One cannot pass *R. cinnabarinum*. It seems to be a long investment to plant a batch of *R. cinnabarinum Roylei* to attain 10 or 12 feet, in a position where it is possible to stand and see the sun shining through the flowers.

In the early morning or late evening these plants are inexpressibly



beautiful, and can only be described as a treasure tree hung with rubies. The flower, if picked, is not striking.

To a lesser degree this same remark applies to *R. Thomsonii*. Both plants are perfectly hardy, but require plenty of leaf mould and slight shade.

I have already referred to the Fortunei group. This group of plants has given rise to such magnificent hybrids as 'Loderi,' 'Lady Bessborough,' and innumerable grandchildren—which are among our finest plants to-day.

They are hardy, can be grown almost anywhere, and were, incidentally, the only group which survived the last spring frosts and flowered freely this year.

Do not let them overflow themselves, which they are very apt to do.

*R. dichroanthum* is in itself not a good garden plant. Its flowers have several shades of orange, a colour which fortunately it has imparted to its progeny. It is quite hardy. It is not free flowering enough to recommend itself to the gardener who is wishing for a show, but it is from this plant that I am looking forward to the best garden hybrids of the next few years.

Such crosses as *R. Soulei*  $\times$  *dichroanthum* and *R. dichroanthum*  $\times$  *decorum* have been flowered by Mr. WHITE and Mr. WILDING in beautiful shades of orange-yellow with a green throat. These excite the hybridist to further efforts, which I am sure will give for the first time a real orange hardy hybrid.

*R. Kingianum* is, unfortunately, a source of dispute. There is, however, a species of *Rhododendron*, perhaps wrongly called *R. Kingianum*, which is a hardy plant with waxy-green leaves and perfect trusses of scarlet flowers which open late in June. No doubt botanists will decide what this plant really is, but whatever it is, it is well worth growing.

*R. Makinoi* is a species which has been grown as *R. Metternichii*, and which makes perfect little bushes, with soft pink flowers. It has extraordinarily long pointed leaves held upwards at an angle of 45 degrees, which are a pleasant contrast in the *Rhododendron* border at any time of the year.

*R. niveum* and its various hybrids are well worth growing in those parts of the country in which they thrive. We have a magnificent display of this plant sent up each year from South Wales, and it is a colour which, although angry with the normal reds and pinks, is at last coming into its own with a more modern race of softer colours.

It is extraordinary that we should admire the colours of the Lilacs, and yet dislike the same colours amongst the *Rhododendrons*.

*R. orbiculare* has an abominable little flower of a dirty pink colour, but grows into a round bush with pretty heart-shaped leaves. Its cross with *R. Williamsianum* is a valuable garden plant.

*R. reticulatum* is also known as *R. rhombicum*, and is one of the deciduous *Rhododendrons*, a lilac-magenta, which flowers in early



May. The flowers are approximately the same size as a florin, and a group of these plants gives a magnificent display but should be planted apart from the red and pink hybrids and species, and brought nearer the whites and yellows.

To those who require a species which is really bone-hardy I must mention *R. Smirnowi*. I understand that this plant was known among the old ANTHONY WATERER hands as 'Jack Frost,' from the white indumentum which appears on the growth and underside of leaves.

I have heard that WILSON advised that this *Rhododendron* should be used as a parent, owing to the extreme hardiness under all conditions in America. Unfortunately, so far nothing worthy of note has originated from it, but there are some promising seedlings.

*R. yunnanense* varies considerably in the types that the collectors have sent home. All the various seedlings have proved themselves worthy of garden use, but the form sent back by WILSON is perhaps the most suitable for inland gardens. It is a striking white, with a red spot. If grown in a good soil it is apt to grow too freely in the autumn and be cut by early frost. It will stand more drought than most *Rhododendrons*.

#### HYBRIDS.

The earliest hybridists, most noted of whom were the two firms of WATERER, raised a wonderful lot of hardy hybrids. The materials on which they worked were mainly *R. catawbiense*, a very purply red, *R. brachycarpum*, a mauvy pink, a pink form of *R. arboreum*, and *R. maximum*, either a rose colour or the white form with a yellow spot, and, of course, *R. ponticum*.

With such colours to work with it is remarkable what an extraordinary range of hybrids these firms produced.

Many of the original hybrids like 'Lady Eleanor Cathcart' are among the best of to-day. As may be imagined, the early reds are of a purply nature, although much in demand in their day. It is, however, the mauves and purples which excel among the older *Rhododendrons*, and these may never be surpassed.

To see some of the original plants of *R. purpureum elegans* and *R. purpureum grandiflorum* in flower is to realize how magnificent *Rhododendrons* can really be in the open.

It was with the introduction of fresh blood, probably from *R. Thomsonii*, and the careful selection of seedlings that the better reds came into existence. Such plants are 'B. de Bruin,' 'Doncaster,' 'G. A. Sims,' 'Essex Scarlet,' all of which are varieties of a very high grade and much sought after to-day.

Time permits only a very few hybrids to be mentioned, but I will give a list approximately in alphabetical order of some which I consider to be outstanding in garden merit.

The first I have marked is 'Album elegans.' This plant, raised by the Knap Hill Nursery, is one of the first *Rhododendron* hybrids, but

not, as its name implies, white. It is a pale mauve, and its great asset is that it grows taller and faster under poor conditions than any other *Rhododendron* in cultivation. It is useful as a windbreak, or on the outskirts of a wood or drive, where plants are expected to thrive without any attention. It is a buffer plant, and will blend with any other variety you care to put it with.

'Armistice Day' is a clear red, useful in a garden, but requires slight shelter.

We cannot pass the hybrid 'Barclayi' and its various forms. Those growers of scarlet *Rhododendrons* who live in more unfortunate climates look with wonder and admiration at these tall-growing plants with magnificent scarlet flowers when they visit the western gardens in April. They are well worth the four stars the *Rhododendron* Association has awarded them. Do not be tempted to plant them under any but the most favourable conditions, as there is not the remotest chance of success otherwise.

One of the purest reds of the older hardy hybrids is 'B. de Bruin.' This plant will withstand wind and frost, and be always relied upon to give a good show under any normal conditions.

'Beauty of Littleworth' belongs to a race of hybrids raised at Littleworth by the late Miss MANGLES. It is a large pure white. There is also 'Isabella Mangles,' pink, of which 'Goldsworth Pink' is a seedling.

'Emily Mangles' and 'Dawn's Delight' are progeny of a fine form of *R. Griffithianum*, which existed for many years in a greenhouse at Littleworth. They are hardy from a point of view of growth, but require slight protection to prevent the buds from being frozen by the winter frosts.

For the best three I would select 'Beauty of Littleworth,' 'Goldsworth Pink' or 'Isabella Mangles,' and 'Dawn's Delight.'

It is remarkable that these plants are very difficult to show, and that is one of the reasons why their popularity has not spread. The trusses on the side of the plant are all formed so that each pip faces outwards, and the truss becomes the shape of a *Gladiolus*. In transit these flowers quickly become damaged and fall off.

'Betty Wormald' is a hybrid of the 'Pink Pearl' type, too well known to describe, but it is rather more tender than 'Pink Pearl,' and more delicate in colour.

'Blue Peter' is the bluest hardy hybrid. This was raised by WATERER, SONS & CRISP.

'Blue Tit' is one of the best hybrid rock *Rhododendrons*.

'Britannia' is a hardy crimson *Rhododendron* which has stood the severe frosts of the last few years. There is no doubt that this plant is steadily becoming hardier in our climate and it is one of the few red varieties which is worth growing for its foliage.

'Broughtonii,' an old-fashioned tall-growing *Rhododendron*, used always to be described as having a truss as big as a quart pot. It makes a good background *Rhododendron* in a garden.

'Butterfly' is one of the yellow *R. campylocarpum* hybrids (actually a cross between 'Mrs. Milner' and *R. campylocarpum*) which marked a new race to be brought into garden Rhododendrons. They are all of a neat compact growth, and vary from the yellow of *R. campylocarpum* to a clear pink.

'C. B. Van Nes' is a good dark scarlet, but rather tender, of better colour than 'Britannia.'

'Corona' is one of the most delightful Rhododendrons ever sent out from Bagshot. This plant is peculiar in that in ideal positions it is apt to become bud-tender. It suffers from the same greediness as *R. Griersonianum*. In the favourable position which it occupies in Mr. ROTHSCHILD'S garden at Exbury it seldom flowers. The buds, which are fed too long in the autumn by the plant, become rotten with the early fogs and frosts of November, whereas it withstands considerable frost in the more exposed positions in Surrey.

'Countess of Derby' is a 'Pink Pearl' hybrid raised by Mr. WHITE of Sunningdale. It is the best of a great number of Rhododendrons, such as 'Professor Hugo de Vries,' 'Dr. S. Endtz,' 'Glory of Bassett,' etc., and is a cross between 'Pink Pearl' and 'Cynthia.' It has a huge truss of pale rosy crimson, fading to a pale pink. For those who like a very large flower, this plant is ideal.

These two parents have been the most popular hybrids for the last twenty years. There are more of them sold than any other variety. 'Cynthia' is rosy crimson of a striking hue and rather difficult to associate with other colours. In the North this plant is even better than in the South.

'Dorothea' is a cross between *R. decorum* and *R. Griffithianum*. *R. decorum* is close to *R. Fortunei*, and *Fortunei*  $\times$  *Griffithianum* gives the celebrated *R. Loderi* cross which everyone knows too well to require my praise. The substitution, however, of *R. decorum* for *R. Fortunei*, and the careful selection of seedlings, give a hybrid smaller than *R. Loderi*, with a slightly more bell-shaped flower with a green throat. This plant when tall is very attractive, and its hybrid with *R. campylocarpum* has produced the finest yellow Rhododendron which I have yet seen. Perhaps this particular plant together with the blood of *R. Wightii* and *R. Fortunei*, and perhaps *R. caucasicum*, will give us a yellow Rhododendron fit for Utopia.

'Dr. Stocker' represents a cross between two of these plants—*R. Griffithianum* and *R. caucasicum*. This is too loose-growing and tender to be of any great garden value, but its cross with *R. campylocarpum*, which has been raised by Lord SWAYTHLING, is, I believe, magnificent, although I have never yet had the fortune to see this plant flowering.

'Earl of Athlone' is probably the finest red Rhododendron that has been sent out from Holland. It is a waxy scarlet of great texture, and is noticeably becoming hardier every year it is grafted in this country, and naturally the people who take the grafts take those

which have not been damaged by frost. In this way the plant becomes several degrees hardier in the hands of the nurseryman.

'Faggetter's Favourite' was a chance hybrid of *R. Fortunei*. It is quite beyond my capability to describe the colours of this plant. I can only say that it includes cream, lavender, pink, and also scarlet, which occurs at the tip of the buds. So far this plant has proved itself very hardy. It is, unfortunately, not yet grown in sufficient quantity to be acquired by everybody.

*R. fastuosum flore pleno* has a very soft place in my heart. Suffice to say that one of the most experienced exhibitors of Rhododendrons always says that it is the keynote to every exhibit he has put up. In fact, there is no colour I know of which can be said to clash with this beautiful lilac-coloured Rhododendron.

'G. A. Sims' is one of the darkest and purest scarlets sent out by the Knap Hill Nursery and is well worth all commendation, but is a very straggly grower.

Now, as we come to 'Glory of Littleworth,' we naturally come to the question which are the best Rhododendron-Azalea crosses.

The Rhododendron Committee gave *R. Broughtonii aureum* a First-class Certificate quite recently, and this plant is probably the best. It is of a clear golden hue, and a good grower.

'Glory of Littleworth' is more striking, in that it has an intense orange blotch in a lemon-colour flower; but during the time that this plant is out of flower it is scraggy, and an eyesore to the garden.

Of the others, 'Gemmiferum' and 'Nellie' are perhaps the best, though 'Fragrans' and 'Govenianum' are worth growing for their fragrance alone.

'Goldsworth Crimson' is one of those few plants which shine brilliantly in shade as well as in sun. It is, unfortunately, rather of a straggly habit in a position where it has been established for some time.

'Goldsworth Yellow' is one of the earliest yellow hybrids. This plant opens with an apricot bud. The longer it is out the more yellow it becomes. Flowers slightly spotted with green and bronze.

'Handsworth Scarlet' and 'Handsworth White' are two early Rhododendrons which are quite hardy, and should be planted because they can be always relied upon at a time when few Rhododendrons are showing colour.

*R. × impeanum* is a very valuable Kew cross (*R. impeditum* × *R. Hanceanum*). It forms a dense bush with blue flowers and is more suitable for rock gardens.

'Lady Clementine Mitford' is, no doubt, one of the best of the ANTHONY WATERER hybrids. It bears large trusses of cream and pink flowers.

'Mrs. Philip Martineau' is pale pink, with tall conical truss. The flowers are made very significant by a pale green blotch.

'Lady Eleanor Cathcart' has already been mentioned. It is a good hardy back-row plant.



FIG. 88.—*POMADERRIS ELLIPTICA* AND *LOROPETALUM CHINENSE* IN THE TEMPERATE HOUSE, WISLEY, MARCH 1936.



FIG. 89.—*MECONOPSIS BETONICIFOLIA* AT WISLEY, JUNE 1936.

[To face p. 329.

'Lady Longman' is a slight improvement on 'Lady Eleanor Cathcart,' but it does not grow with the same robustness. Both plants are a clear pale pink.

'Lee's Scarlet' is usually the first Rhododendron in flower at Woking. Normally it opens just before Christmas, and flowers as frost allows, truss by truss, throughout January and February. It is not scarlet, being better described as a rosy crimson.

The cross between *R. Fortunei* and *R. campylocarpum* has, unfortunately, been given several names. 'Letty Edwards' is one name in which this Rhododendron can be acquired from the trade.

The whole race of this plant is well worthy of cultivation, and the flowers are similar to *R. Fortunei*, having the tinting of the yellow *R. campylocarpum*. There are some beautiful pink forms which always come from crossing the tall form of *R. campylocarpum*.

One of the most effective pieces of planting I have seen for some time consisted of this Rhododendron planted with a *R. campanulatum* hybrid intermixed with bluebells and some deep forms of *R. concinnum*—purples, pale mauves, pale yellows and apricot colours blending to make a harmony which is a great relief after looking at innumerable red and pink Rhododendrons.

'Mars' is aptly described as a deep true red, in fact it is a plant which, although bright crimson, has a slight hue of bronze in the texture of the flower. It is certainly one of the best of the hardy hybrid Rhododendrons.

'Mother of Pearl' is worthy of mention. The colour is exactly described by the name, and the plant is a sport of Rhododendron 'Pink Pearl,' which it resembles entirely in growth and characteristics.

'Mount Everest' is one of the whitest of Rhododendron hybrids, but it is interesting to note that those Rhododendrons which appear the whitest in the garden have shades of mauve or purple in the flower—just the same as a mountain range with snow has the shade of purple where the sun does not strike.

'Mrs. E. C. Stirling' is a fine open pale pink flower, an old-fashioned hardy hybrid, and a parent of a very good Rhododendron, 'Starfish,' also pink with a flower whose shape is aptly described by the name.

'Mrs. Furnival' and 'Mrs. G. W. Leak' are two Rhododendrons rather similar in character. They are pink, with a brown blotch. Of the two, although 'Mrs. G. W. Leak' has received the F.C.C., 'Mrs. Furnival' is perhaps the better garden Rhododendron. 'Mrs. G. W. Leak' quickly fades to an uninteresting pale pink.

In passing, I should like to speak of the merits of a very ancient Rhododendron, which, I am sorry to say, has been "Y'd" in the Rhododendron Year Book. Evidently my plea was not strong enough when this was done. I refer to Rhododendron 'Old Port.' This is always called the nurseryman's friend, not as a wine but as a plant. It grows well, it has good foliage, and the deep rich plum colour of its flower, although atrocious if placed with reds, crimsons and pinks, has at last found an ally among the more delicate shades of

lilac and cream. *Rhododendron* 'Old Port' in full flower, with the last of the yellow Azaleas, is a sight worth going miles to see.

'Penjerrick' varies enormously from white, cream or pink. It grows to a great height, and is really a magnificent *Rhododendron* when seen in large banks, but it is too tender to be grown in the average inland garden.

'Peter Koster' is a brilliant colour for those who like a crimson-magenta, but it must be kept alone as it will quarrel with every other red in the garden.

'Purple Splendour,' a plant which has come into its own in the last decade, is certainly one of the most magnificent *Rhododendrons* ever sent out among the old hardy hybrids, and probably 'Ponticum' is one of its parents. If kept away from some of the more vivid crimsons, this plant could well be planted into any *Rhododendron* border.

'Ragged Robin' at its best is one of the most beautiful *Rhododendrons* that can be mentioned, but the flower does not last very long. It needs to be placed in a cool position where the buds linger as long as possible before opening. It is from the buds that the intensive colour is derived.

'Red Riding Hood' is an example of a seedling of the old hardy hybrids which has lost all the old anthocyanin pigment.

'Rosamund Millais' is also worth a place in the garden. It is a good red.

'Rubens' is one of the recent additions to the old type of *Rhododendron*. This plant has a magnificent truss, and is a true red of a very similar colour to *Rhododendron* 'Mars,' already mentioned.

'Shilsonii' could always be grown where sufficient shelter can be given from the early frost. It is a clear crimson.

'Snow Queen' is, as the name implies, a very pure white.

'Souvenir de Anthony Waterer' and 'Souvenir of W. C. Slocock' are two particularly interesting *Rhododendrons* as they are named after two hybridists who worked literally side by side on two quite different types of *Rhododendrons*. They each represent one of the best plants sent out by each of them. 'Souvenir de Anthony Waterer,' perhaps the hardier of the two, salmon-pink, with an orange blotch, is a very striking *Rhododendron*, and should not be excluded from any collection.

The other plant, 'Souvenir of W. C. Slocock,' is one of the best hybrids of *R. campylocarpum* which has so far been sent out. It opens an apricot shade, fading to a pale yellow ochre. It has large flowers, and a larger truss than most *R. campylocarpum* hybrids, flowering slightly later.

'Tally Ho' is a brilliant orange-scarlet, but unfortunately it is tender. The cross was raised by Lady LODER and Mr. CROSFIELD simultaneously. It is quite probable that the plant would be hardier if slightly starved, as it suffers from the greediness of both its parents and becomes bud-tender in the autumn.



Of the two 'Uniques,' the one raised by WALLACE is the best named. It is a very odd colour, and fades quickly from orange-pink to a pale buff.

The one raised at Goldsworth is pale cream, slightly tinted with pink and mauve. It forms a tight compact bush, and has lately received favourable attention from connoisseurs of Rhododendrons. It is, of course, a member of the *R. campylocarpum* hybrid class, the best of which in my opinion are :

'Souvenir de Anthony Waterer.'	'Butterfly.'
'Souvenir of W. C. Slocock.'	'Lady Primrose.'
'Dairymaid.'	'Unique.'
'Mrs. W. C. Slocock.'	

For those who are starting to take up Rhododendrons and wish to make a foundation for a collection, I have selected twelve species and eleven hybrids which I should never be without in my own garden, namely :

<i>Species.</i>	<i>Hybrids.</i>
<i>barbatum.</i>	'Blue Peter.'
<i>campylocarpum.</i>	'Britannia.'
<i>cantabile</i> or <i>russatum.</i>	'Corona.'
<i>cinnabarinum.</i>	'Earl of Athlone.'
<i>discolor.</i>	'Fastuosum flore pleno.'
<i>Fortunei.</i>	'Lady Clementine Mitford.'
<i>Griersonianum.</i>	'Letty Edwards.'
<i>hippophaeoides.</i>	'Mount Everest.'
<i>Kingianum.</i>	'Souvenir de Anthony Waterer.'
<i>mucronulatum.</i>	'Souvenir of W. C. Slocock.'
<i>sutchuenense.</i>	'Unique.'
<i>Thomsonii.</i>	

#### DISEASES AND PESTS.

Game and rabbits, fortunately, do not do very much damage to the larger type of Rhododendron.

Rabbits will, on occasion, nibble the smaller type of plant, such as *R. × praecox*, *R. dauricum* and *R. yunnanense*. They are best kept away from these by wire, or by keeping the plants sprayed with a little Renardine and water. Or, if necessary, a few fir cones soaked with this or paraffin, and thrown amongst the plants, usually send them in search of other food.

Tits are sometimes a terrible nuisance. Here again prevention is better than cure. No one likes to wage war on these delightful little birds. In fact, one of the finest dwarf hybrid Rhododendrons is actually named after the tit. The great trouble with the tit is, that if it suspects one bug in forty buds, it is quite willing to go to the trouble of pulling all forty buds off to look for it. Tits are normally migrating in large flocks when damage occurs, and so very little can

be done by trying to trap the birds, as a fresh contingent very quickly arrives.

If, however, you are troubled in this way, I would recommend when you are spraying your other trees to put a little winter wash over these plants, and I think you will be well rewarded when the flowering season comes. If you find this does not work, try Renardine mixed with water and spray on. This is a loathsome-smelling compound, and it is a very distasteful job to handle. It is, of course, of great use in stinking out rabbits.

Bullfinches certainly are a pest, and there is very little that can be said in their favour. They usually, however, keep their attention to cherries and plums, and do not interfere with the Rhododendron. In fact, in the Midlands and south of England, very little damage is done to Rhododendrons by any bird.

Among the pests, the two insects which are the most troublesome are the lacewing fly and the white fly.

The white fly makes the leaves dirty and sticky, and in the case of some plants which are not doing too well, is apt to damage them seriously.

The lacewing fly attacks most varieties of Rhododendrons if they are out in the open. It is not so active in shade.

The cure for both is to spray with insecticide when the insects are small. Later in the year they become difficult to kill, and start laying their eggs along the midrib of the leaf, which hatch the next year.

Rhododendrons which are badly affected by lacewing fly give the appearance of having an attack of rust.

Most fungus diseases which attack plants avoid the Rhododendron. It is, however, subject to the honey-dew fungus in woodlands, especially in those woods which have thick leaf mould under birch trees, and the only cure so far as I know is to take up the soil and try to restrict the disease as much as possible. If the soil is continually moved, especially in the winter, the disease seems to die out.

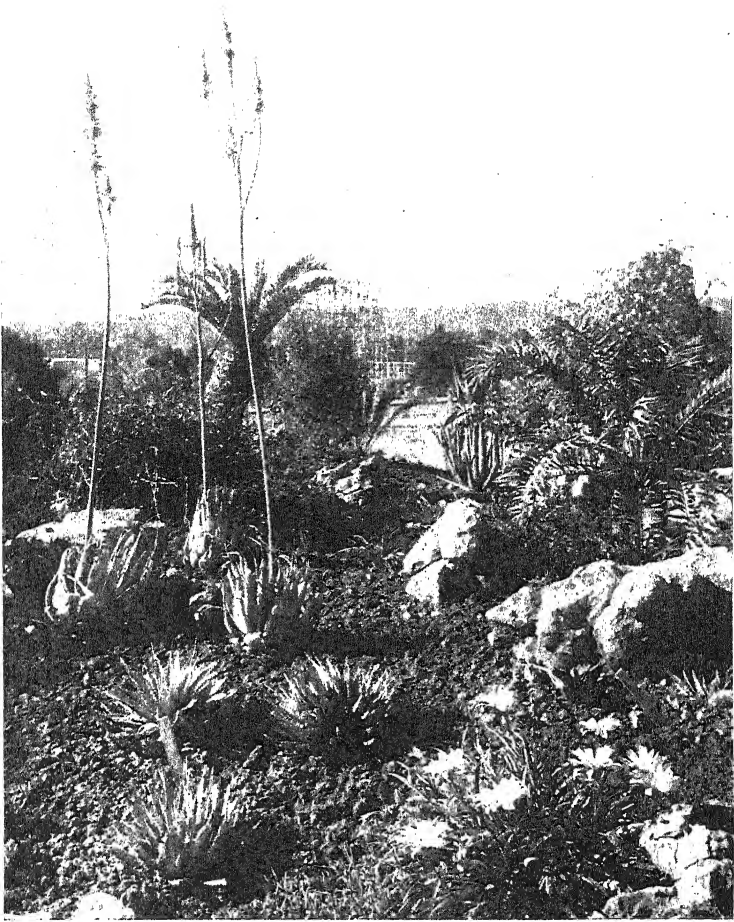


FIG. 90.—PLANTS ON THE ROCK GARDEN, JOHANNESBURG EXHIBITION.  
*Aloe pretoriensis* in flower ; *A. pratensis* in left foreground, *Gazania* on right.  
 Behind the rock, *Encephalartos horridus*.

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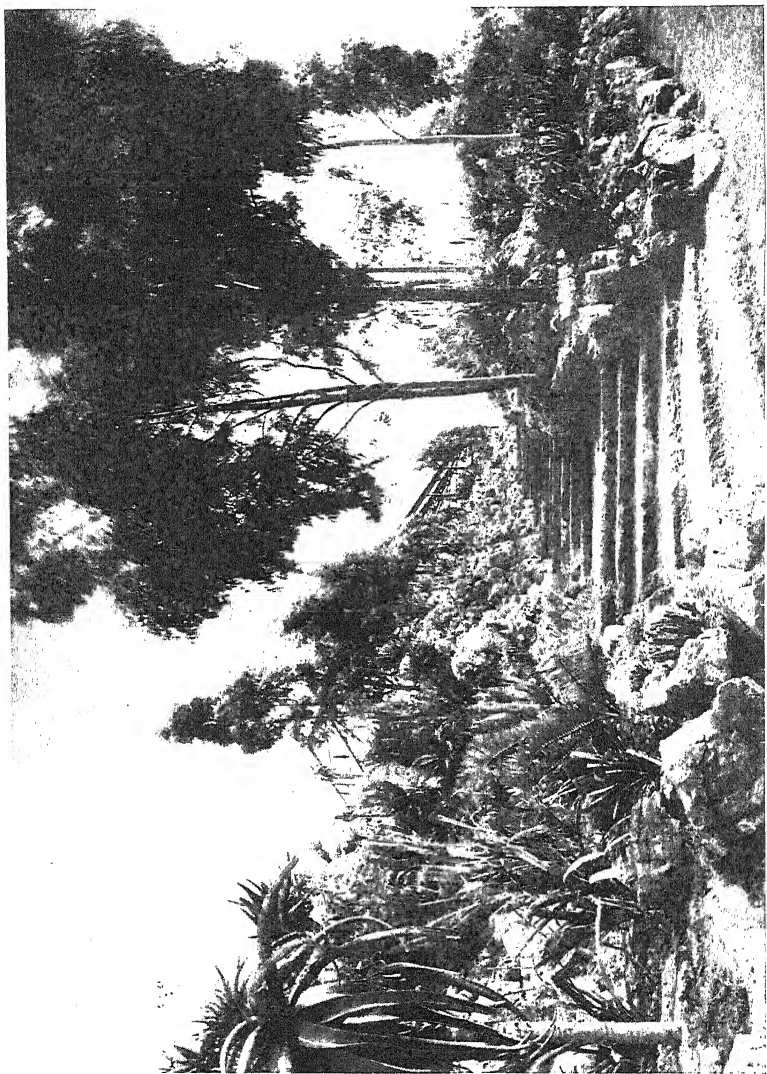


FIG. 91.—A STEPPED PATH, ROCK GARDEN, JOHANNESBURG EXHIBITION.

THE ROCK GARDEN AT THE EMPIRE EXHIBITION,  
JOHANNESBURG, SOUTH AFRICA, SEPTEMBER 1936—  
JANUARY 1937.

By JOHN PHILLIPS, D.Sc., F.R.S.E., F.L.S.,  
Professor of Botany in the University of the Witwatersrand,  
Johannesburg.

FOR over a century the rich and varied flora of South Africa has attracted the interest of botanists, horticulturists and plant-lovers generally, resident in Europe. While the glories of the remarkably beautiful plants of the Cape Peninsula and environs have made a strong and ever-increasing appeal to overseas visitors and to connoisseurs across the water, it is becoming more and more evident that the grotesque wonders of South Africa's succulent plants are making even a wider and a stronger appeal. The reasons for this are not difficult to see. Succulents may be obtained in so many forms, in so many sizes, are things of wonder and beauty in respect of their vegetative parts as much as of their flowers, and with reasonable care may be grown indoors in conservatories and window-boxes, over a really wide range of genera and species. More recently it has been shown that some of the Succulents, at all events, may be propagated from seed fairly readily—this bringing within the purchasing power of many a suburban plant-lover forms that otherwise would have been impossible for him to obtain. While some forms are notoriously difficult to cultivate, even in the land of their origin, and very especially overseas, it does seem likely that, as our knowledge of our Succulents increases, we shall be able to grow more and more of them either from seed or from vegetative parts: as such knowledge increases there will probably be a corresponding increase in their popularity both in South Africa and in the world beyond.

On the scientific side, the long years of devoted service of that notable systematist, the late Dr. N. E. BROWN of Kew—incidentally an Honorary Doctor of Science of the University of the Witwatersrand, Johannesburg—has been largely responsible for attracting the attention and interest of professional botanists to certain of the South African Succulents, notably the Asclepiadaceae, the Euphorbiaceae, and the Aizoaceae, especially the genus *Mesembryanthemum* and its nearer relatives.

It therefore was in the nature of a very happy inspiration that the authorities responsible for the conception and planning of the forthcoming Empire Exhibition at Johannesburg should have decided to arrange for the making and staging of a Rock Garden representative of some of the attractive and instructive features of South Africa's Succulents. Not only should the result of their decision, and of the many months of hard work involved in making this decision a reality,

be of the very first interest to professional botanists, to horticulturists, and to genuine plant-lovers, but it should succeed in drawing the attention and admiration of the visiting public as a whole.

While the size of the Garden, and its general excellence in conception and in detail, will undoubtedly impress many of those who see the finished product, those few who have been privileged to study in some detail the stages in the conversion of the apparently unpromising slopes of a rough earth plateau to the present Garden of dignity and grace must be the more profoundly impressed. The Garden is a tribute to what man, given knowledge, interest, and adequate financial aid, can effect in the short period of about ten months.

Set at the edge and along the slopes of a plateau commanding a fine view of a portion of the Exhibition Grounds and looking across some of the residential portion of Johannesburg to the distant Magaliesberg Mountains, the Rock Garden is in striking contrast with the Lake, fringed by hygrophilous plants, not far from its base. From the Rock Garden a streamlet tumbles over naturally arranged rocks and ledges into the Lake. Some impression of the extent of the Garden may be obtained from the following figures: the height of the upper edge of the rocky slope above the general base is about 40 feet; the length of the base, exclusive of sinuous features, about 575 feet; the length of the summit edge is about 475 feet; approximately 1,356 tons of rock have been utilized in the construction of the terraces, buttresses and rocky steps and paths.

The aspects best provided for are the Eastern and Northern, while a smaller portion of the Garden enjoys a north-eastern aspect; it is known from experience that Succulents thrive best in Johannesburg on the warmer aspects.

Work was commenced in August 1935, under the personal supervision of Mr. FRANK FRITH, F.R.H.S., known to many plant-lovers in Britain by reason of his Succulent collection at the Wembley Exhibition, and noted in South Africa for the fine work he did in the development of Succulent gardens for the Railway Administration. To those acquainted with Rock Garden work there will be nothing new in the remark that much time, forethought and energy had to be expended in the preliminaries of rough preparation of the site, selection of suitable rock material for the matrix, placing in position this material when it came to hand—and all the time doing this in relation to a general conception of the finished product and of the constituent rocky and living features that would go to make up the whole. Taking everything into consideration—the shortness of the time available, the great amount of rocky and plant material required, the difficulties inherent in the establishment of certain of the Succulents—the whole may be described as very good.

Although a large number of plants has been accumulated through purchase, it must be emphasized that much beautiful and varied material has been presented by public bodies and private donors.

Special mention in this connection should be made of the presentations made by the Director of Parks, Johannesburg ; the Curators of Parks at Port Elizabeth and Queenstown ; the Superintendent of the Union Buildings Gardens, Pretoria ; the Division of Plant Industry, Pretoria ; Messrs. A. B. REYNOLDS, E. SHEPPARD and F. FRITH. The South African Railways have been particularly helpful in assisting in regard to transport of the often bulky specimens from considerable distances.

In general, the Garden may be described as being made up of from six to eight terraces, so arranged and so broken as to prevent the impression of uniformity or monotony in structure ; the slope has been so treated as to provide the maximum amount of space for larger or smaller plants, without at the same time sacrificing anything in regard to height. Monotony of summit or edge effect has been eliminated by erection of small rocky prominences, and by the planting of tall *Aloe Marlothii*, *A. dichotoma*, *A. Bainesii*, *Euphorbia ingens* (a tree succulent *Euphorbia*), and other plants of similar size ; in several places tall *Encephalartos* (Cycads) have been used for similar purposes, and with good effect.

While it must be stressed that there are in the Garden a very large number of families, genera and species of succulent and sub-succulent and woody plants, it may be generalized that the most striking effects are those produced by the Aloes, the Mesembryanthemums, the *Euphorbias*, the Cycads (*Encephalartos*), the Pelargoniums, and by several of the Compositae—notably *Aster capensis* (Agathaea, *Felicia capensis*) with its splendour of blue flowers set in a bright green of foliage, *Dimorphotheca Ecklonis* with its large white-tinged-with-mauve flowers, and *Euryops athanasia*, a golden-flowered Composite with finely divided rich green leaves. In some portions of the Garden the Crassulaceae are well represented, especially in respect of the genera *Cotyledon* (e.g. *C. orbiculata*, *C. Wickensii*), *Rochea*, *Crassula*, and *Kalanchoe*, while scattered here and there are representatives of the large tree-like *Cotyledon fascicularis*, or Boterboom.

The Aloes are exceptionally well represented, both as to the number and quality of the individuals, and as to the number of species and varieties of suspected hybrids ; it is estimated that about sixty forms are at present in the Garden. Mr. A. B. REYNOLDS, who in recent years has spent much time in collecting, studying and describing South African Aloes, has been largely responsible for the assembling of so many forms, and to his specimens have been added those of Mr. FRITH. One of the rarities among the Aloes is the peculiar *Aloe polyphylla*, which is represented by about half a dozen well-grown specimens. Tree forms such as *A. dichotoma* and *A. Bainesii*, shrub forms such as *A. arborescens*, rosette forms such as *A. striata*, and micro-forms such as *A. variegata* are each well represented by a number of species and specimens.

Among the Aizoaceae, the Mesembryanthemums are the best represented both as to number of species—about thirty—and mass

effect ; a particularly pleasing *ensemble* is afforded by *M. speciosum* ; there are perhaps eight or ten species of *Lithops* ; *Conophytum* is well represented, while there are some fine specimens of *Frithia pulchra* and *Glottiphyllum linguiforme*. The micro-forms such as *Lithops* are suitably set in among the larger forms of various genera and species.

There is a good collection of *Stapelias*, *Huernias*, and *Carallumas*, and some fine specimens of *Tavaresia* ; it is likely that a number of these will be in flower at the time of the Exhibition. The *Euphorbiaceae* are represented, among others, by *Euphorbia ingens*, the tall tree form so well known to those acquainted with savanna vegetation from the Northern Transvaal to Central Africa, *E. media*, *E. Cooperi*, and species of the form of *E. obesa*, *E. truncata*, and *E. mauritanica*.

*Portulacaria afra*, the pink-flowered Spekboom, has established well, and when in flower should present a pleasing spectacle.

The peculiar *Testudinaria sylvatica* may be seen in several good specimens, while the unique Halfmens, from south-west Africa, *Pachypodium namaquanum*—the apex of which always points north—is present to afford several problems to the botanist.

Height effect has had to be obtained by the judicious use of small indigenous trees and by large woody shrubs ; those worthy of special mention are *Chilianthus arboreus*, *Rhus lancea*, *Dombeya rotundifolia*, *Cussonia spicata*, *Tecomaria capensis*, *Plumbago capensis*, and the Alexandria Boxwood, *Buxus MacOwani*. The exotic *Crotalaria agatifolia*—a free-growing woody shrub with a wealth of golden papilionaceous flowers—has been utilized with effect for the same purpose. Several specimens of *Eucalypt*—although Australian and not indigenous—have been worked into the scheme, with the object of providing height effect and contrast.

If Nature is kind, the Garden should be further enriched in the summer of the Exhibition by the flowers of *Erythrina Zeyheri*, *Adenium sp.*, *Sutherlandia frutescens*, *Gladiolus*, *Moraea*, *Gasteria*, *Haworthia*, *Agapanthus*, *Kniphofia*, *Buphane*, *Pelargoniums* of many species and varieties, *Leonotis*, *Gazania pinnata*, *Aster fruticosus* and a host of other free-flowering genera and species.

In the space available it has not been possible to touch upon more than a very few of the many features of the Gardens, but it will be clear from the foregoing that something well worth study has been attempted.

As regards the Lake, artificially created by removal of many tons of earth and the bringing in of many tons of rock, suffice it to say that a novel and highly pleasing feature has been worked in to form a marked contrast to the rugged Succulent garden overlooking it. The vegetation of the island and of the banks is being built up by selection of hygrophilous members of the indigenous flora, along with exotic species. The Lake has playing into it a streamlet gushing from a suitable portion of the Rock Garden, this streamlet being fringed by hygrophilous plants, these again being in contrast with the Succulents of the Rock Garden (fig. 91).



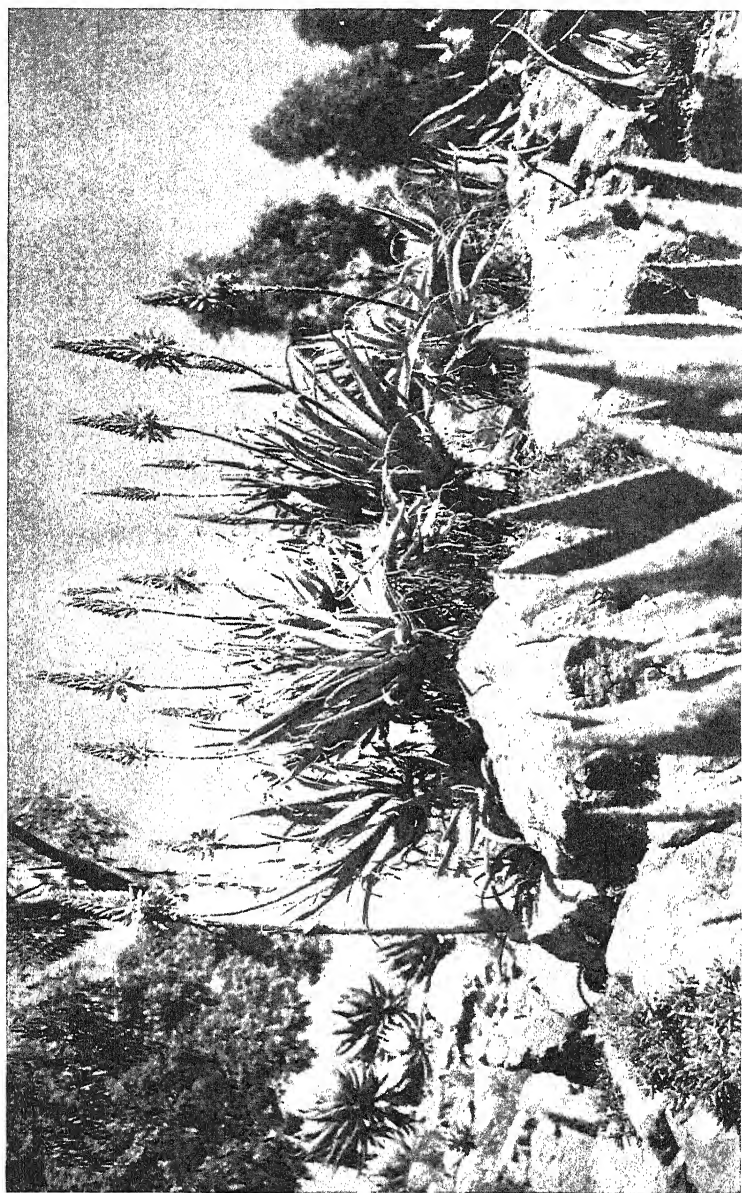


FIG. 92.—A GROUP OF A HYBRID OF *ALOE ARBORESCENS* ON THE ROCK GARDEN AT JOHANNESBURG.

[To face p. 336.]

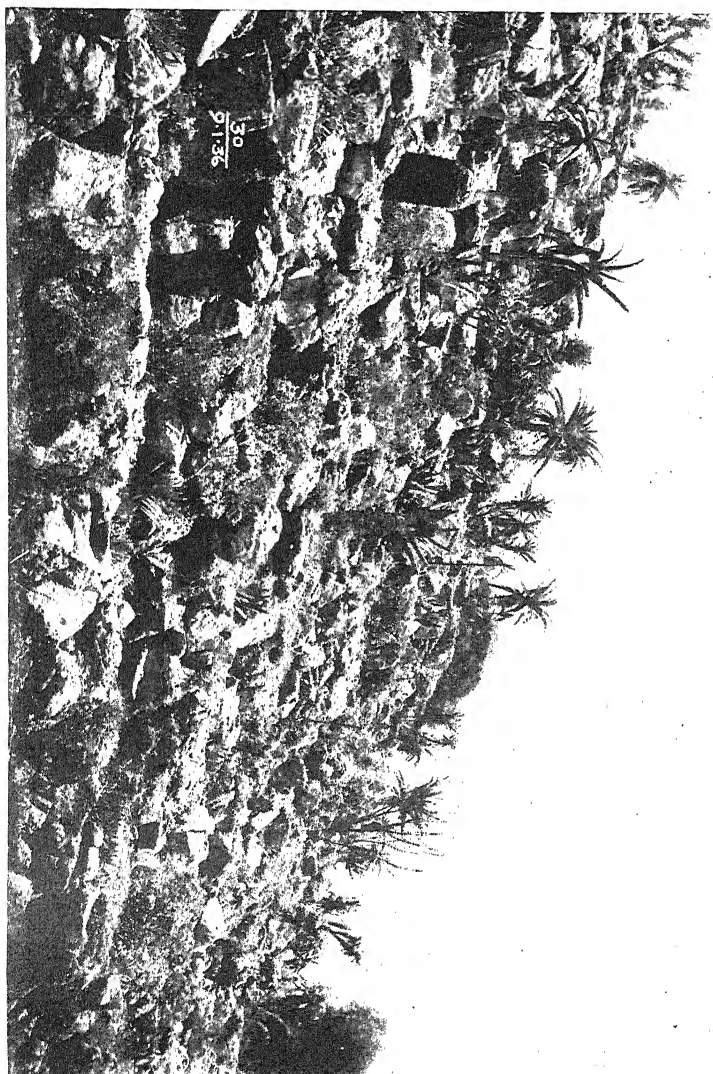


FIG. 93.—PART OF ROCK GARDEN, JOHANNESBURG EXHIBITION.

Many acres of lawn, principally made up by the strains of *Cynodon*, Bradley, McGinnis and Florida, and by Kikuyu-grass (*Pennisetum clandestinum*), have been laid down in the past few months, and provide a pleasant green background to the structural and other details of the Exhibition. The extent and excellence of the lawns will come as a surprise to visiting horticulturists, a large proportion of whom are not likely to associate successful grass cultivation with the vagaries and rigours of the Transvaal climate. The lawns are tastefully relieved by beds, in which will appear, from time to time, showy masses of flowering shrubs and herbs.

Several fine avenues of trees have been established since August last, of which the Plane Avenue and the *Sophora japonica* Avenue are perhaps the most pleasing.

It is likely that those interested in the technical aspects of the Rock Garden and other plants will have opportunity of attending lecturettes given by local scientific workers.

## CLIMBING PLANTS.

By ERNEST MARKHAM, F.R.H.S.

[Read June 23, 1935; Mr. R. D. TROTTER in the Chair.]

THE gardens of this country owe much of their charm to climbing plants which are both numerous and varied, the majority of them being singularly beautiful when successfully employed to adorn the walls of our homes, pergolas, arbours and other structures provided for them.

Those which actually climb and adhere unassisted to the face of a brick or stone wall, as does the ivy, are limited in number. Nevertheless, there are a few which possess this accommodating characteristic, namely, *Parthenocissus Henryana*, *P. tricuspidata Veitchii*; the Tecomas or Trumpet Creepers (*Campsis radicans*), which hold on to any surface with their little pads; *Pileostegia viburnoides* of the Khasia Hills, India; and Schizophragmas (or Climbing Hydrangeas).

Others climb by means of tendrils, as in the case of the vines; some by their leaves, as the Clematis; or by thorns, as the Smilax; in addition to which we have the great company of twiners and weavers which elevate themselves by means of long annual shoots which, in their desire to ascend, will fold round each other ropewise, as in the Honeysuckle, Wistaria, Jasmine, etc., until sufficient strength is acquired to enable them to rise erect and attach themselves at higher levels, and in this way become strong and self-supporting. Many, such as the vine, Wistaria, Mountain Clematis, etc., are of noble proportions and woody in character, whereas not a few are herbaceous, and others of annual duration only. Those of noble aspect demand height and space in order to fulfil their natural development, although it must be claimed for them that, under a little restriction, they may be very attractive.

Those of you who have seen the effect of *Vitis Kaempferi* (*V. Coignetiae*) in autumn, streaming to earth through the branches of large trees, forty to fifty feet in height, its huge leaves a curtain of crimson and gold, or a Mountain Clematis tumbling down from elevated structures in May, in great snowy-white cascades, or Actinidias and Ampelopsis gracing the branches of good-sized trees and buildings, will appreciate my meaning. There are accommodating positions of this kind to be found in most gardens if we determine to make use of them, and even in the small garden these plants may still be used to advantage by careful management in the way of pruning and training.

Among these delectable plants are numbers of suitable subjects for the adornment of walls, fences, rocks, or other elevated structures, which are usually available and which may be draped with rich and varied colour. It has, moreover, often fallen to the lot of one of these

plants to beautify some unfortunate structure erected in—well—a weak moment !

ACTINIDIAS.—The Actinidias are mostly vigorous twining plants and interesting alike for their leaf, flower, and stem.

*A. arguta* is less vigorous than the majority and a most accommodating plant for walls of medium height. In spring its shoots are absolutely laden with clusters of white flowers, which are rendered conspicuous by the numerous purple stamens.

*A. chinensis* is the giant of the family, and though handsome when confined to walls and other lower structures, this noble climber will ascend to the tops of lofty trees. The large leaves are coated with red hairs, as also the leaf-stalks and the robust young growths which may develop several feet in a season. The flowers are profusely borne and are white at first, cream with age, and  $1\frac{1}{2}$  inch across ; these are succeeded by edible walnut-shaped fruits. This is quite a remarkable climber.

*A. coriacea* (*A. Henryi*) is one of the loveliest and most distinct climbing plants in cultivation, and almost evergreen. The luxuriant leaves are thick, glossy green, from 5 to 6 inches in length, and thus form an ideal setting for the abundant, deep salmon-red flowers which appear in May. This is a choice and beautiful climber, but one which requires a sheltered and rather favoured position.

*A. Kolomikta* is a fascinating and free-growing climber which flowers in May. The flowers are white, but of little importance when compared with the attractive leaves, which are half white and half green, the white portion turning rose with age. Unfortunately the leaves are often damaged by late frosts.

DUTCHMAN'S PIPE.—The Dutchman's Pipe, *Aristolochia durior* (*A. Sipho*), is a vigorous deciduous climber with large, pale green leaves. It is very pretty when clothing the trunks of boughed-up trees and similar objects. The peculiar brown-purple flowers appear in June and are shaped like a Dutch pipe.

CORAL BARBERRY.—The Coral Barberry (*Berberidopsis corallina*) is a remarkably choice and beautiful evergreen from Chile, and should be planted at the foot of cool, sheltered walls. Favourably situated, this graceful plant will attain a height of 20 feet. The best example I have ever seen is growing on a cool north wall in Sussex, and is in luxuriant health. The wall is draped annually with its pendent racemes of rich red flowers which remind one of eardrops. Certainly this is one of our most treasured climbers and one which enjoys a peaty soil. This lovely plant is not easily established, but grows freely once it has settled down.

APPLE-BERRY.—The Apple-berry (*Billardiera longiflora*) from Tasmania is a slender, evergreen climber with wiry growth and narrow leaves. A delightful plant for the choicest positions on sheltered walls where the slender shoots will twine among anything which offers support. The flowers appear in July and lend a very graceful—though not conspicuous—aspect to the plant. They are succeeded in October

and November by the most astonishing oblong, violet-purple fruits, unlike anything else known to me. These exquisitely coloured fruits are borne in such numbers as to render the plants both attractive and conspicuous.

The white-flowered variety is also a choice and very lovely climber for similar positions, fruiting abundantly every year.

*CELASTRUS ORBICULATUS* (*C. articulatus*) is a vigorous, deciduous climber, and a very accommodating one, which may be adapted to quite a variety of uses, but is perhaps seen at its best when scrambling over low trees, pergolas and fences. During October the rich, golden canopy of its leaves is a feature of the garden, being most noticeable with the fall of day, and the leaves remain in this luminous condition for quite a long time before falling. With the shedding of the leaves its greatest glory is revealed in the handsome fruits with which the branches are laden. These are enclosed in a yellow outer covering, which presently expands, disclosing the brilliant scarlet fruits. These are very decorative, both in the open air and in a cut state. In the United States people go to the woods to gather the long fruiting sprays of this climber for their Christmas decorations.

**CLEMATIS.**—From such a large and important family the task of selecting a few for the purpose of this talk has not been easy. The following, however, will not disappoint those who desire something out of the ordinary and something very beautiful.

I take the species first with *C. calycina*, a native of the Balearic Isles. This is a slender, evergreen climber, with fern-like leaves which assume a bronzy hue from the time the flowers arrive. These are yellowish white, 2 inches across, freely splashed with purple, and appear from September until March. A well-flowered plant during a mild spell in winter is noteworthy. Strong winds are its greatest enemy, therefore plant near a cool, sheltered wall and prune very little, if at all.

*C. alpina* (sometimes called *Atragene*) is a native of Central and Southern Europe, and one of the earliest to bloom. It loves a cool, north aspect, and there commences to bloom at the end of April. Very soon the whole plant is draped with exquisite, satiny blue flowers, which remind one of great blue columbines. Though nodding and borne each on its solitary stalk, these appear in such numbers as to render the plant highly decorative. There is a charming pink variety of this species which appeared last year among a batch of seedlings in my garden, which should have a great future.

*C. alpina sibirica* is a variety with lighter green leaves than those of the type, and charming, nodding white flowers. At its best, this is one of the loveliest of climbers, bearing hundreds of attractive white flowers in May. Trained to a cool wall it might be taken for a curtain of snowdrops. One form, with much larger, creamy white flowers, which we grow on a north wall at Gravetye, comes into bloom in March, quite five weeks in advance of the other, and is a plant of great beauty.

*C. Armandii* is a noble evergreen species from Central and West China, which has come to stay. When happily situated it grows with great vigour and, in its season, blooms with the greatest profusion. It is a grand climber for warm walls and low out-buildings, quickly enveloping the roofs if permitted to do so, and eventually wreathing them with blossom. It will develop many feet of growth in a season, and it is mainly from these that the flowers are borne the following year. The glossy green leaves are of much substance, often 8 inches in length, and thus render the plant interesting and attractive even when not in bloom. The fragrant flowers are white at first, eventually suffused with blush-pink. These appear in axillary clusters and wreath the long, graceful branches for several feet. In some forms it flowers very early, and when exposed to wind and storm is invariably damaged, hence the necessity of some kind of protection. There are a few kinds of this *Clematis* with flowers of a deeper pink shade which need further trial in the open air before assessing their value in this direction.

*C. campaniflora* is a very hardy and graceful small-flowered species from Southern Europe, which climbs to a height of 15 feet. The flowers are individually small and of a charming pale blue shade, but they are borne in such profusion that the whole plant becomes buried beneath their loose, lace-like curtain of soft blue, which showers down from supporting branches of shrubs and trees near which it may have been planted. Once established, this plant requires very little attention, unless it must be limited to a given space.

*C. Flammula* is a robust climber capable of producing the most picturesque effects from early August until late autumn. It is quite lovely when grown on fences and pergolas, but to see it at its best one should plant it so that it grows through the branches of unimportant trees, when it will climb to a height of 25 feet. In August the great billowy masses of fragrant white flowers make their appearance; it is then a subject of imposing beauty as the loose folds of bloom fall downwards and fill the air around with their fragrance. Too frequently this fine climber is neglected and allowed to grow into uninteresting and congested masses.

*C. Flammula* var. *rubro-marginata* has larger flowers with deep pink edges, and is also a very lovely plant.

*C. × Joviniana* is a robust hybrid between our native *C. Vitalba* and the herbaceous *C. Davidiana*, which will reach a height of 15 feet. I use it to clothe the sides of pergolas and to spread through the branches of holly and similar trees. From August to October, when the vigorous growths descend—forming cascades of fragrant pale lilac flowers—it is a feature of the garden. The individual trails of bloom are often 5 feet in length.

*C. macropetala* is a deciduous and moderately vigorous species from China and Siberia, quite unlike any other *Clematis* known to me. Although introduced during more recent years by PURDOM and FARRER, it was known to botanists nearly two hundred years ago.

The flowers of the best types are of a most exquisite shade of lavender blue, and individually 3 inches across. They have four sepals, and inside these are many smaller petal-like segments which give the flower a semi-double appearance, the whole of it being coated with soft down. This truly glorious plant belongs to the *Atragene* group of *Clematis* and blooms upon the wood made the previous year from mid-April onwards. Usually we get a few flowers again during late summer and autumn. There is a very attractive pink variety which flowers even more freely and promises to become a valuable plant for forcing in pots, in addition to its decorative qualities when grown in the open air.

*C. Rehderiana* is a vigorous climber from Western China which, by reason of its late flowering, is important for this country. Shoots up to 20 feet in length are developed during the summer, which in early autumn are wreathed with bloom. Such a bold plant will hold its own in almost any position. It is, however, easily kept in bounds by severe pruning—similar to the pruning of an old vine—in January. I know no more beautiful or graceful subject for the adornment of porches and large walls, or for draping unimportant, low trees during September and October, when it is laden with sweet-scented, primrose-yellow, cowslip-like flowers, which are produced in panicles 9 inches long from the leaf axils. In the evening its fragrance is delightful.

*C. tangutica* is the most beautiful of all yellow-flowered *Clematis* and will flourish in quite a variety of positions. Its leaves are glaucous-grey and the flowers yellow, nodding, and continuously borne over a good part of summer. They have four pointed sepals and are suspended like Chinese lanterns from the slender stems. This is not all: for in autumn *C. tangutica*—in its best form—is again one of the most decorative subjects in the garden by reason of the great and abundant silvery seed-heads with which it is so freely draped. These actually measure 6 inches across and provide decorative and very lasting material when cut and dried and placed indoors.

*C. texensis* (syn. *C. coccinea*) is a choice, distinct and graceful species which grows to a height of 6 feet each season, dying back to the ground-line in the winter. It is of a climbing nature, and is one of those interesting plants of quality one desires to have near the house, or on a low, warm wall. Its leaves and shoots are glaucous and blue-grey, the curious flowers pitcher-shaped, about an inch long and clear scarlet in colour. They are borne successively over a long period and, standing nicely clear of the foliage, are effective. I find it quite happy at the foot of a warm wall, a position it has occupied for the past twenty-five years. One should insist on getting the true plant of this variety, as many poor, washy kinds are offered.

*C. florida*, a rather fragile species with wiry growths and creamy-white flowers; *C. lanuginosa*, of stronger constitution and bearing handsome, large pale lilac flowers; and *C. patens*, with flowers of lavender and deep blue shades 6 inches across, are the three principal species used by the earlier hybridists in creating the gorgeous large-



flowered kinds we know to-day. They are natives of China and Japan and have been of the utmost importance to raisers and growers of these fine flowers all over the world.

*C. Viticella*, a native of Southern Europe, is one of the parents of many lovely hybrids. The plant is robust, but refined, and forms a most desirable subject for the outlying portions of the gardens, where it may be used to garland fences, trees, shrubs, etc. The flowers vary somewhat, but are generally blue, purple or lavender,  $1\frac{1}{2}$  to 3 inches across and borne in the greatest profusion; indeed, the whole plant becomes hidden beneath them. A single plant, which had scaled a holly hedge at my home last year, must have carried five thousand fully open flowers at one time: a remarkable sight.

HYBRID CLEMATIS.—From among the beautiful hybrids I select a few of unusual quality, although others run them very close. They are as follows:

*Miss Bateman*, a moderately vigorous kind with white flowers and conspicuous chocolate-red anthers, is one of the earliest of the large-flowered hybrids to come into bloom.

*La Lorraine*, a robust plant which also blooms early, has large flowers of satiny pink suffused with lavender, and of much texture.

*Mme. Edouard Desfosse* is one of the largest flowered Clematis I know, the blooms often measuring 10 inches across. They are violet in colour, with deeper bars, and of considerable substance. Growth is moderate and I commend it to all who approve of its colour.

*Comtesse de Bouchard*, a lovely kind of moderate growth bearing quantities of 6-inch flowers of a delightful satiny rose-pink shade over the greater part of summer.

*Mme. van Houtte* is a glorious large white, the flowers being beautifully formed and often 10 inches in diameter. Growth is of a moderate character.

*Lasurstern* is a very handsome Clematis of moderate growth. The large and beautifully formed flowers are of a delightful shade of deep blue, their sepals being crinkled near the edges.

*William Gladstone* is a remarkable flower of great size and refinement. The colour of the open flower is clear pale blue. I regard this as being one of the loveliest Clematis in cultivation.

*Lady Betty Balfour* is a distinct and most attractive kind with 8- and 9-inch flowers of a deep violet-purple shade with white stamens. It is one of the very best for all purposes.

*Perle d'Azur*, which blooms from August onwards, has clear sky-blue flowers which are borne in the wildest profusion. It is a remarkably beautiful plant for fence or tripod, and if its flowers are not so large as some of the others, they certainly outclass them in numbers and are most decorative.

*Ville de Lyon* flowers both early and late, and is unusually vigorous. The well-formed flowers are carmine-red and borne in the greatest profusion. This fine plant is the best of its colour and will make 12 feet of growth in a season.

*Huldine* is one of the most vigorous of this type of Clematis, and precious, as it comes into bloom at a time when many are on the wane. The flowers are white inside with lavender bars outside. The long shoots laden with bloom form themselves into cascades of beauty and are a feast for the eye. Among Clematis this has no peer as a cut flower.

*Pourpre Mat* is the last of all the large-flowered Clematis to bloom, and, for that reason alone, must be regarded as a precious plant. Beginning to bloom at the end of August, the vigorous growth is soon lost beneath its canopy of rich, glowing crimson-purple flowers, which sweep in graceful folds to the ground. This handsome kind will develop 18 feet of growth in one season.

By planting this selection you will obtain a succession of bloom throughout the summer and autumn.

*Exogonium purga*, the Jalap Plant, requires a sheltered wall, as it blooms late in the season, usually from September onwards. It has large, dark-coloured tubers, and from these the Convolvulus-like growths rise to a height of 15 feet, clinging to anything near for support. As summer begins to draw to a close it bursts into bloom and soon becomes a loose curtain of rich, rose-purple, Convolvulus-like flowers, being at that time one of the loveliest of climbing plants. If a few tubers are planted near the base of a climbing rose or other wall shrub, the plant will thread its way among the branches for support, and then droop from them.

HONEYSUCKLE.—The honeysuckles are indispensable plants and comprise some of the loveliest and sweetest climbers we possess.

*Lonicera Periclymenum*.—At its best, our native *Lonicera Periclymenum* is not surpassed by any of the foreigners, however handsome these may be. I have seen this splendid plant used to great effect when associated with moderately low trees, and I know of one instance where its flower-laden branches are suspended from those of an old oak at a height of 40 feet.

*L. ciliosa*, the Western Trumpet Honeysuckle, possesses no fragrance, but is a very attractive plant. The leaves are of a glaucous green and the whorls of bloom orange-scarlet and yellow. This is a plant of distinction and one which may be accommodated on moderate-sized walls and fences.

*L. etrusca* is one of the most satisfactory of all honeysuckles, producing an amazing quantity of bloom over a longer period than any other kind known to me. From July onwards, the plant is submerged beneath its canopy of deliciously fragrant sprays of bloom. These branching sprays of yellow flowers suffused with red reach several feet in length. The stout young growths, often from 6 to 8 feet in length, which develop later, continue to bloom until autumn approaches. The plant is perfectly happy in any position.

*L. italica* is one of the first of the honeysuckles to bloom, and perhaps the most deliciously scented of them all. A hybrid between the foregoing and *L. Caprifolium*, with purplish young shoots, yellow and



FIG. 94.—PART OF ROCK GARDEN, JOHANNESBURG EXHIBITION.  
(p. 333)

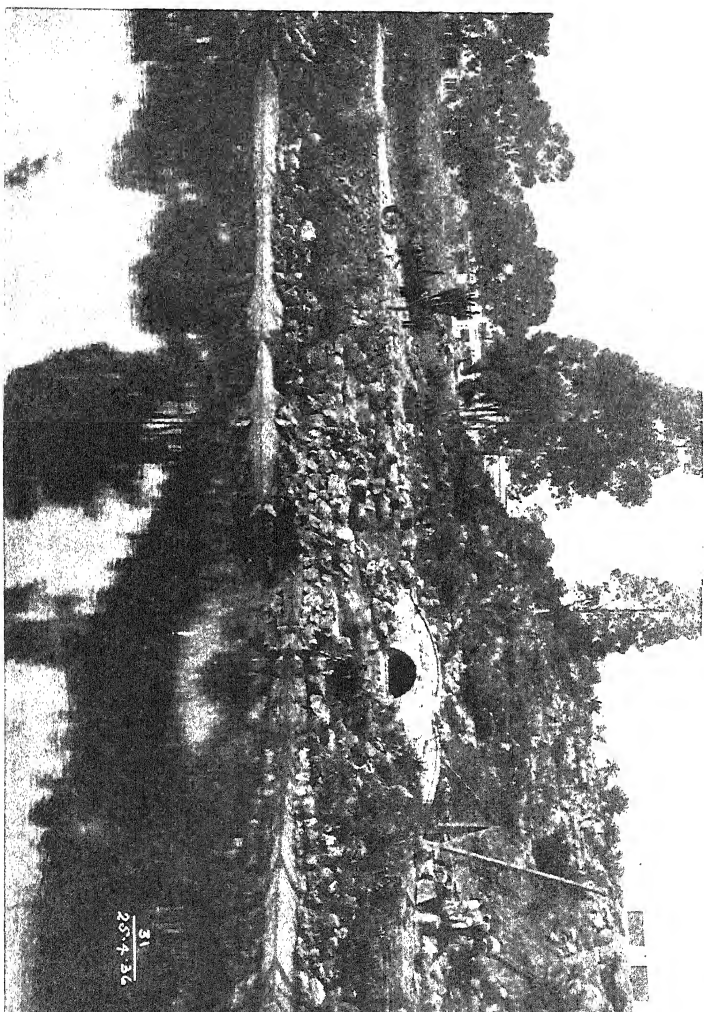


FIG. 95.—THE LAKE, BRIDGE AND ROCK GARDEN, JOHANNESBURG EXHIBITION.  
(p. 336)

[To face p. 345.

purple flowers which form a loose decorative panicle 2 feet in length ; its presence is known long before one reaches the plant itself.

*L. similis Delavayi* is almost evergreen and of moderate growth. It is about the last of the honeysuckles to come into bloom, and is usually at its best in August. The long flowers are cream at first, deepening to yellow, and are borne in the wildest profusion. Quite a remarkable plant when laden with bloom, and quite a feature of the garden, due mainly to the light airiness of its flowers. Occasionally it is damaged by severe frosts owing to its habit of developing late shoots, which do not have time to mature ; this, however, is rarely serious.

*L. tragophylla* is the great Chinese Woodbine, with handsome glaucous leaves and huge clusters of bright yellow flowers, the latter being the largest of any woodbine which can be successfully grown—except in most favoured places—in the open air in our country. Not infrequently this plant will suddenly collapse for no apparent reason, its only failing known to me. On the whole, however, it is a vigorous and free grower which prefers an open fence or other airy position to that of hot dry walls, and is certainly more effective when so situated.

**JASMINUM.**—The sweet, white-flowered *Jasminum officinale*, which covers the porch of many cottage homes, is well known, as also is the grand and indispensable yellow *J. nudiflorum*, which drapes the walls of our homes during winter and furnishes armfuls of cut flowers again and again when flowers are scarce. We cannot all grow the handsome *J. primulinum*, as this requires the favoured counties, but those who can do so should certainly possess it. A lady writing to me early in March from near Truro told me that it was then a mass of bloom on her house.

*J. × Stephanense* is a free-growing and recent hybrid, which produces clusters of sweet-smelling pink flowers in July, its weak point being a tendency to variegation in its foliage.

**LARDIZABALA.**—*Lardizabala biternata* is a native of Chile, and related to Berberis. It is a distinct and rather attractive, fast-growing evergreen climber for a warm wall, where it will reach 20 feet or more in height. The leaves are thin and glossy dark green ; the flowers purple and borne during winter in drooping racemes. I have seen this plant very attractive when clothing the southern face of a residence from ground to eaves, its appearance being unusual, especially during the winter months.

*Periploca graeca* is the Silk Vine, and the only species cultivated here. It is perhaps at its best when given some freedom on a warm wall, but grows quite well on sunny pergolas. It is a fast-growing plant which twines around anything near for support. The clusters of greenish-brown flowers appear during July and August and possess a heavy, unattractive odour. When cut or broken, a white liquid exudes from the stems which is said to be poisonous. It is quite a nice plant to furnish variety among climbers.

*Menispermum canadense*, the Canadian Moonseed, is a deciduous climber with rich green, heart-shaped leaves, and these form its greatest attraction. The greenish-yellow flowers, though numerous, are inconspicuous, but the racemes of black fruits which follow give the plant a rather special interest. There is a freshness about this fast-growing climber which is a pleasing asset. It may be cut to the ground annually if desired, when new growths, developing from the base, will quickly clothe its allotted space up to a height of 10 feet or more. It is quite a nice climber for a rough pole in the open.

**MUTISIAS.**—These showy evergreen climbers are natives of South America, where they are said to climb and attach themselves to large bushes and small trees in much the same way as our native honeysuckles do here. This should be our guide when planting them, although I do not recommend very choice shrubs for their hosts, for once these beautiful plants get established in a position to their liking, they are liable to envelop their host to such an extent as to kill it. These Composite plants are very handsome indeed when laden with their large, showy, *Gazania*-like flowers. I once saw a 12-foot specimen of *Leptospermum Nichollii* borne down with one of these vigorous plants.

The accommodation suggested does not deprive us of employing them on warm walls and similar places, where they may be permitted to thread their branches among other climbing plants for support. There are slender tendrils at the terminal ends of the leaves of most of them, and by these the branches are held in place. Suckers develop freely from the base of some of them and grow very rapidly, making several feet of stem in a few months. These, in their turn, send out interlacing growths which rise and spread in all directions.

Of late years this family has been augmented by new introductions which have increased its interest, the following being among those most widely grown.

*Mutisia Clematis* is a little tender, but otherwise a vigorous grower, bearing quantities of gorgeous orange-scarlet blooms from 2 to 3 inches across during the summer months.

*M. decurrens*, though a moderately strong grower, does not attain the vigour of the preceding, and rarely exceeds 10 feet in height. It is also more difficult to establish, but once this has been accomplished we get our reward in conspicuous vermilion flowers with yellow centres, each 4 inches across.

*M. ilicifolia* is the holly-leaved mutisia, and has flowers which vary from pink to mauve. These are 3 inches across and appear over a long season. In favoured gardens this beautiful climber may be successfully grown in the open, but it is more reliable when given cool greenhouse treatment.

*M. oligodon* and *M. retusa* are two of the more recent introductions from Chile, bearing large pink flowers, and, in addition to running up small trees and through bushes, are frequently used to veil large rocks and low walls.

*Muehlenbeckia complexa* is a climbing shrub with little heart-shaped, and sometimes fiddle-shaped, leaves and wiry growths which form a dense but not ungraceful thicket, which is effective in well-chosen positions such as gracing a large boulder, or rambling at will through unimportant shrubs, and I have seen much less attractive climbers used on walls. It is almost evergreen in the south, and has a peculiar interest when laden with its dainty, greenish-white flowers which give it a lacy effect. It is a good old plant which is not always used to the best advantage.

ROSES.—*Rosa sinica Anemone* is a lovely climber for warm walls, where it will rise to a height of 25 feet ; it is also adaptable for fence and pergola. Growth is vigorous, foliage large and glossy, and the beautiful flowers 6 inches across. They are single and of a rich rose-pink. This is one of the most delightful single roses in cultivation, but one which, in cold districts, must have the shelter of a wall. *R. laevigata* is thought to be one of its parents, but on this point there exists some doubt.

*R. bracteata*, the Macartney Rose, is one of the most distinct and beautiful roses we have. With me it is almost evergreen, and climbs to a height of 12 feet on a warm wall, and would possibly go much higher. The leaves are plentiful, glossy green on the surface, and downy underneath, as are the young growths and flower buds. The flowers are single, milky-white—with a central tuft of golden stamens—saucer-shaped, and 4 inches across. A choice and distinct climber for special positions. Its characteristic habit of suckering from the base will appeal to many.

*R. 'Cupid'* is a vigorous rose with large and abundant leaves and is suitable for almost any position. The huge, single, flesh-coloured flowers are produced in open, spreading clusters, individual blooms measuring 6 inches across. These are exceedingly beautiful and are succeeded in autumn by handsome rose-coloured hips.

*R. 'Mermaid'* is perhaps the most lovely and satisfactory single climbing rose produced for many years, and possesses many qualities unassociated with other climbing roses. It has the Macartney rose as one of its parents, and partakes much of the character of the latter in its almost evergreen habit, and in the continuity of its blossoming period : a precious asset. Starting to bloom at the end of June, it continues until prevented by frost, a character much to be desired in our roses. The superb single flowers are sulphur-yellow, often 6 inches across, and enhanced in their beauty by the central cluster of amber-coloured stamens. The bronzy-green leaves appear to be immune from mildew, and this climber may be used with advantage in any position.

*'Lady Hillingdon'* is a lovely and continuous-blooming rose with glossy bronze leaves and long, orange-yellow buds. The flowers are produced on long, slender shoots, and are thereby highly desirable as cut flowers. As a climber it is about the best rose of its colour, flowering profusely and continuously over a very long period. The growth, though of a slender nature, is free and plentiful.

'Lemon Pillar' is a rose of robust growth and suitable for almost any position, even for spreading through the branches of small trees. I have used it with large hollies, out of which great showers of handsome blooms burst over our heads. But it is a grand rose for fence, pillar and pergola, the lemon-yellow buds and flowers being perfect in form, even though they are of great size and borne in such profusion.

AUSTRALIAN CLIMBING ROSES.—These are raised by a celebrated Australian grower and comprise some of the most distinct and beautiful roses we possess. There are several of them, but I must confine my remarks to a few only.

'Black Boy' is a large, loose, semi-double, deep crimson flower, shaded with blackish maroon overlaying fiery scarlet. The flowers are borne in large open clusters, and in strong sunshine have a rich glow of scarlet. Growth is vigorous, and the amount of flowers borne very large. It is really the darkest climbing rose we have.

'Gwen Nash' is one of the loveliest of roses known to me. It is moderately vigorous, and produces its exquisite flowers over a large part of the summer and early autumn months. They are 6 inches across, semi-double; the large-petalled cyclamen-pink blooms, paling towards the centre, have their beauty enhanced by a large cluster of yellow stamens.

'Queen of Hearts' has large and beautiful foliage and semi-double, rich pink flowers 6 inches across. When fully open the large central clusters of yellow stamens add to their charms. This is a good grower, flowers profusely, and in addition to its great display in June and July continues more or less throughout the season. A grand rose, this!

'Sunny South' possesses much of the character of the last named, but is a semi-double rose of a more carmine shade of pink: at its best a very decorative rose and one suitable for gardens large and small.

There are several more of this type of rose, some of which are startling in their brilliancy, and possess such names as 'Cracker,' 'Ruby King,' 'Firebrand,' 'Scorcher,' etc.

*Sollya heterophylla*, the Australian 'Bluebell Creeper,' is a lovely plant for the more favoured counties. It has narrow leaves, slender twining growths, and light gentian-blue, bell-like flowers which adorn the elegant shoots from June onwards. I saw this beautiful creeper a few years ago clothing a whole side of the house, many feet in height, in Mrs. POWYS ROGERS' garden near Truro, Cornwall. It was absolutely laden with nodding blue flowers, and struck me as being very unusual in its distinct beauty and gracefulness. I have not yet been able to persuade it that Sussex is as good as Cornwall!

*Solanum crispum* is a quick-growing scandent and partially evergreen shrub, developing long, downy shoots annually, and necessitating rather severe pruning each year to keep it in place. Happily situated, its flowers are borne in great profusion from June till autumn, a well-flowered specimen being most attractive. The flowers are blue-purple with a yellow centre, and appear in corymbs, often 6 inches





FIG. 96.—ENCEPHALARTOS, CLIVIA AND STAPELIA ON THE ROCK GARDEN,  
JOHANNESBURG EXHIBITION.



FIG. 97.—A SUCCULENT CISSUS. ON RIGHT, *Aloe Peglerae*.

across, which stand nicely clear of the leaves. This is a very lovely and satisfactory plant for high warm walls, and in Sussex we have had it 20 feet in height as a bush in sheltered corners. It is a native of Chile.

*Solanum jasminoides* is a more slender-growing plant than the preceding, but even so, its growth is very rapid and will soon clothe a considerable area. Being a native of Brazil it prefers a warm and rather sheltered site, and is rarely seen to better advantage than when running completely over low buildings. By midsummer the starry flowers, which are white with a yellow eye and borne in large, loose clusters, appear in the wildest profusion; indeed, the whole plant is buried beneath its loose white trails, this happy condition remaining until autumn is advanced. The most beautiful example I have ever seen was on the south-east front of a residence.

*Smilax rotundifolia* ('Horse Briar').—These briars are not often seen, yet many of them possess no little beauty and interest. They have slender prickly stems which rise from a woody root-stock, to a height of 20 feet in the case of this particular kind, forming masses of handsome fresh green and distinct-looking foliage which assumes a bronzy tinge as the season advances. The flowers are in most instances inconspicuous, but the little clusters of purple-black fruits, about the size of peas, coated with glaucous bloom render the plant quite interesting. This particular kind is about the most robust of the group and with me once spread through the head of a good-sized cherry tree.

*Campsis chinensis* (*Tecoma grandiflora*) is the gorgeous Trumpet Flower of China and Japan, bearing, from late summer onwards, handsome large drooping clusters of orange-scarlet flowers. These are individually 3 inches in length, and quite that across the mouth of the tube; a dozen or more appear in each cluster, so that a well-flowered plant is at once conspicuous. There are several fine forms of this, one of the best being 'Mme. Galen,' with striking large salmon-red flowers. These plants attach themselves to any solid surface.

*Campsis radicans* is the American Trumpet Flower, and is hardier than *C. chinensis*. It is vigorous in growth and, when suitably placed, will, by its own self-clinging habit, scale a height of 40 feet. The leaves are large and pinnate, and more dense than in *C. chinensis*. The trumpet-shaped flowers are orange-scarlet and abundantly produced—especially during hot summers—in loose clusters at the ends of the current year's shoots. One of the loveliest I have ever seen had been planted at the foot of an old apple tree, through the branches of which it had spread until some of the growths had fallen to the ground. This great weeping mass was a striking feature when in bloom, and one not easily forgotten. A wall is not absolutely essential for this vigorous climber.

*Trachelospermum* (Chinese Jasmine).—Of these choice evergreen climbers (once known as *Rhynchospermums*) there are three or four kinds, all of which are desirable subjects for warm walls, or sheltered

positions near paths, where their sweet-smelling flowers may be enjoyed. A moderately light soil is essential for their successful growth, and, provided with this and something to attach themselves to, they will prove a never-failing source of pleasure and attraction. Their leaves are glossy green, and in *T. divaricatum*—which is the hardiest—the young shoots are coated with hairs. This is a lovely plant, creeping by its own efforts to the tops of quite high walls. During July and August the whole face of the plant is a mass of deliciously scented creamy-yellow flowers. It has been growing on an east wall at Gravetye for many years and has never suffered in the least from frost.

*T. jasminoides* has larger and more pointed glossy leaves and larger flowers, the latter being pure white and very fragrant. When in bloom there is a freshness about this choice climber which is distinct and pleasing, but, like *T. japonicum*, which has still larger and broader leaves and the same sweet flowers, it does not grow with me with the same freedom as the first named, which I have long regarded as an indispensable climber.

VITIS.—Earlier in this talk I referred to the beauty of *Vitis Kaempferi* (*V. Coignetiae*) when dressed in its mantle of gorgeous autumn colour. In this respect it is surpassed by no other member of this great and interesting family. There are, however, some forms of it which never colour even though you may starve them in order to force them to do so; others are planted in soil too rich, and refuse to colour until the soil has become impoverished, when they begin to show their real value. This lovely vine is a valuable shade-providing subject during the great heat of summer, when used on arbour and pergola, and is worthy of a place on that account alone.

In *V. Davidi* (once known as *V. armata*) the graceful, though rampant, growths are thickly coated with short, stout spines, a distinction which always proves to be a source of attraction. The lustrous heart-shaped leaves are glaucous and shining and possess a freshness not always present in this family; they develop charming tints before falling.

*V. heterophylla* is interesting not only for its dense canopy of attractive lobed leaves—which during summer develop a very deep green colour, changing in autumn to quiet red and brown shades—but for the quantity of porcelain-blue berries which are so freely borne in early autumn.

*V. megalophylla* is a very vigorous climber with enormous pinnate leaves, often 2 feet in length and width, and the largest of any known vine. With me, some years ago, a young plant shot up through the branches of a good-sized birch tree, bent over and came back again to earth. The effect was very graceful and pleasing. When trained to warm walls it occasionally fruits, and is then very attractive, the fruits being nearly as large as cherries, red at first and ultimately black.

*V. striata* is the evergreen vine, and a delightful climber for either high or low walls not too exposed. This pretty evergreen forms a dense covering and lends a note of interest throughout the dull winter months

by the rich green effect produced. With the end of February the entire plant begins to change its colour, and by mid-March all has changed to a deep red-bronze with the rapidly developing flower cymes terminating the growths. This is really its most effective stage.

*Ampelopsis*.—To this group belong the richly coloured *Ampelopsis*, which should be more used to spread through the branches of unimportant evergreen trees, under which conditions the autumn effect is most unusual, and cutting back of any kind is dispensed with.

*Vitis vinifera purpurea* is a very ornamental and well-known variety of the Common Grape Vine, and, for garden purposes, one of the most important of this great family, being very hardy and adaptable to almost any position except full north. The leaves of this vine are, in their infancy, a beautiful shade of claret-red and, as the season advances, become rich purple. This climber produces attractive bunches of purple, but uneatable, grapes in late summer, which add to its charm and interest.

In addition to those mentioned there are innumerable handsome kinds of vines for all purposes, embracing those of moderate as well as robust growth.

*Kadsura japonica* is a rather uncommon evergreen climber from Japan, and a member of the Magnolia family. The long, slender pointed leaves are dark green during the summer, but towards autumn develop rich shades of red and purple, being at that time very distinct and ornamental. The solitary, fleshy, cream-coloured flowers are borne on the growths of the year from midsummer until autumn, and are said to be followed by scarlet berries, but these I have not seen. Although this plant will succeed in open positions it is seen at its best when given the shelter of a warm wall.

WISTARIA.—Although so well known, I cannot conclude this talk without reference to the most noble of all woody climbers. I refer to the Wistarias—all of which are of the easiest possible cultivation and suited to almost any position. With the approach of May we get our first flowers of the sweetly fragrant, pale lilac *chinensis*—and what is more beautiful! Of this there are various forms or varieties, the best being the white var. *alba*.

This is followed later by the gorgeous *W. floribunda* (*multijuga*), of which there are several distinct and exceedingly beautiful varieties, such as the white *alba* with racemes of flowers up to 3 feet in length, *rosea* with pale pink flowers and *Russelliana* with deeper-coloured flowers. The flowers of the type are pale lilac with just a touch of purple, and borne in the greatest profusion on racemes 3 feet long.

At Gravetye Manor we grow most of this lovely family, employing them in all kinds of positions such as on walls, pergolas, arbours, through groups of hollies 40 feet in height, and other trees; also as great bushes in the open, but the most glorious effect of all is when they are used to grace pergolas and their long racemes rain down over our heads as we walk beneath them and drink in the fragrance of their flowers.

## TULIP DISEASES.

Two troubles with Tulips have caused a considerable amount of enquiry and much damage during the past year. They are "grey bulb-rot" and "fire." Both of them can to a large extent be avoided or restricted.

Grey bulb-rot is due to a fungus called *Sclerotium Tuliparum* which attacks all parts of the tulip, but especially the bulb. This fungus forms on the parts attacked black resting bodies (called *sclerotia*) sometimes as large as a pea, which enable it to pass from one season to another or even over a longer period without further growth. As a rule, when a bulb is attacked by this fungus it is completely crippled and either no growth appears above the surface or such growth as does appear is yellow and deformed. If the plant does survive, the newly formed bulb is practically certain to carry beneath its brown tunic or between the bulb scales in their upper part some of the resting bodies which soon grow in the moist soil and cause its destruction after planting. When the bulb itself is attacked, as is commonly the case, these resting bodies may be found in its remains or even in the surrounding soil. At lifting time the remains of such bulbs are usually overlooked and the *sclerotia* left in the bed. Thus the bed itself becomes infected and tulips planted therein at any time during the two or three years following are almost certain to be attacked and rapidly destroyed.

This disease is thus very serious and the treatment is to remove as soon as it is seen the affected plant with the soil in which it grows as deep down as the roots extend. This is best done with a tool which will cut out and lift the infected plant and soil without distributing any part on the rest of the bed. This plant and soil should be burnt. This measure is only of value when the trouble first appears in a bed. If this precaution is neglected the next year will see a widespread patch of dead tulips.

Once a bed is infected the only practicable measure is to forbear from planting tulips in that bed for the next four years.

No attempts at removing soil have been in our experience so completely successful as to warrant the expenditure of labour upon it. It would mean the removal of every ultimate crumb of soil to the depth of 18 inches.

Neither have any attempts at soil sterilization by chemical means which have come to our knowledge been completely successful.

Though occasionally a bulb may carry some infection when it is planted, the disease is almost always contracted after planting, from infected soil. The infection may have been brought to the bed on tools or boots of workers.

Fire is a less serious disease, but even this is so disfiguring that a moderate attack may spoil the effect of generous and clever planting.

The symptom of fire is the occurrence of brown spots on any of the aerial parts of the plant, leaves, stem, or flower. Sometimes the tips of the leaves show the trouble first, but this is not necessarily the first part to be attacked. If the attack is severe the stem may look as though burned through, the leaves may look completely scorched, and the flowers fail to open and come to nothing.

Like grey bulb-rot, this disease is due to a fungus—in this instance, *Botrytis Tulipae*. This fungus also forms black resting bodies, but they are scarcely as large as a pin's head and they may be found on any part of the plant which has been attacked, but comparatively rarely in the bulb itself. When they are in the bulb they are to be found as a rule on the tunic, and perhaps most often near the neck of the bulb. Though infection may come from such a source the fungus is so common that any Tulips suitably situated may be attacked.

Contributory causes to attack are frosts, cold winds, storms and moist surroundings, and indeed anything that either checks the growth of the plant or encourages the growth of the fungus.

The suggestions one can make for dealing with this disease arise out of this. If growth can be delayed frosts and cold winds can be to some extent avoided. Planting of tulips should not be done before November 10, and if the weather is open it may well be delayed much later without postponing or interfering with flowering. Deep planting is also an aid in this direction—in most soils 6 inches is not too deep, but drainage must be efficient whether planting be shallow or deep. An open site is best, for winds then dry the foliage quickly and give less chance for the fungus spores to germinate. We are of course assuming all along that the ground has been adequately cultivated. Fresh manure is not, however, good to use.

It is obvious that every piece of diseased plant, since it may bear the resting bodies of the fungus, is a potential source of infection in the next year. Therefore every part of the tulip above ground should be destroyed and not allowed to get into or even on to the soil. The petals as they fall often carry these resting bodies down with them, and if they fall upon a foliage leaf one may often see in damp weather a brown patch develop where they alight. The flowers should therefore be picked off near the top of the stalk just before they fall. This pays. When the bulbs are lifted all parts except the bulbs should be burnt. Lifting must be done every year if the tulips are to remain clean. The bulbs when dried (but do not dry them in the sun) should be cleansed of all loose scales and stored in a dry place in shallow layers, damaged or diseased bulbs being discarded. On no account heap them up while damp.

## PLANTS TO WHICH AWARDS HAVE BEEN MADE IN 1936.

**Cistus** × **Aguilari** forma **maculatus**. A.M. June 30, 1936. From Sir Oscar Warburg, Epsom. The unspotted type of *Cistus* × *Aguilari* is a natural hybrid between *C. populifolius* and *C. ladaniferus*. The present form was raised by the exhibitor from *C. populifolius* var. *lasiocalyx* and *C. ladaniferus*. The flowers are 2½ inches across, white, with a crimson spot at the base of each petal. The somewhat gummy leaves are lanceolate, and have undulate margins.

**Clematis** ‘**Betty Thorn.**’ A.M. June 9, 1936. From Mr. E. Markham, East Grinstead. A pretty large-flowered hybrid raised by the exhibitor. The eight-petalled flowers are pale bluish-lilac, 5 inches across, the petals very narrow at the base.

**Clematis** × **vedrariensis**. A.M. June 9, 1936. From Mr. E. Markham, East Grinstead. A hybrid raised in France from *C. montana rubens* × *C. chrysocoma*. The ternate leaves have coarsely toothed or lobed, deep green leaflets; the blush-pink flowers, 2 inches across, are borne in clusters of three or four.

**Delphinium** ‘**Alice Artindale.**’ A.M. July 2, 1936. Shown by Messrs. Wm. Artindale, Sheffield, as a show variety. Flower spikes long, tapering, with few side growths. Flowers fully double, 2 inches across, the middle of each petal being rosy-mauve, the margins azure-blue.

**Dendrobium** × ‘**Nelly Sander.**’ A.M. July 7, 1936. From Messrs. Sanders, St. Albans. This attractive hybrid bore a cluster of eight well-formed white flowers, intermediate in size between those of its parents, and with a greenish-yellow disc on the isthmus of the labellum. It is the result of crossing *D. Dearei* with *D. formosum*.

**Gentiana** **Georgel.** A.M. June 30, 1936. From Lord Aberconway, Bodnant, and Major F. C. Stern, Goring-by-Sea. This species was introduced to cultivation from Western China by Capt. Kingdon Ward (No. 10,765). The narrow lanceolate leaves form a flattish, four-ranked rosette 4 to 5 inches across, from the lower axils of which arise short, single-flowered branches. The large flowers are broadly campanulate, with six triangular spreading corolla lobes separated by as many pointed plicae. Collectors have described the flower-colour as deep purple, sometimes inclining to blue, but the flowers exhibited had lilac lobes and creamy tubes striped externally with green.

**Geranium** **anemonefolium.** A.M. June 23, 1936. From T. Hay, Esq., Hyde Park, London, W. 2. A much-branched, bushy plant with dark green, pinnately lobed leaves and spreading, cymose inflorescences of light magenta-pink flowers. Coming from Madeira it is not hardy in all British gardens, but seedlings can be raised without difficulty and stocks thus maintained.



**Gypsophila aretioides.** A.M. June 30, 1936. From Dr. Roger Bevan, Henley-on-Thames. An uncommon species from the Caucasus Mountains, forming a very dense, rounded hummock of tiny, grey-green foliage rosettes. It does not flower freely, at least when young, but the fifteen-year-old plant exhibited was sprinkled with small white blossoms.

**Iris innominata.** A.M. June 4, 1936. Shown by Mr. F. Millard, East Grinstead. Plant  $4\frac{1}{2}$  inches tall of slender spreading habit, with  $\frac{3}{8}$ -inch-wide dark green grass-like foliage arranged in tufts. The singly borne flowers on their wiry stems just top the foliage; falls  $\frac{1}{2}$  inch long and  $\frac{5}{8}$  inch wide golden-buff veined with light brown; standards 1 inch long self-coloured and a slightly paler shade than the falls with the style branches and crest of a similar colour as the standards. A native of Oregon, U.S.A.

**Lilium ochraceum.** A.M. June 30, 1936. From the Rt. Hon. Lord Swaythling, Southampton. This striking south-western Chinese species is hardy in the south of England if planted in woodland. It is a tall, slender plant with narrow, scattered leaves and sulphur- or greenish-yellow flowers, the segments of which are much reflexed and stained more or less internally with brownish-purple.

\***Narcissus 'Bonython.'** A.M. March 24, 1936, as a variety for cutting from the open for market. Raised and sent for trial by the late P. D. Williams, Lanarth. This bicolor Trumpet variety (Division 1C), flowering at Gulval from February 21, received an A.M. as a variety for exhibition on March 21, 1933. (See JOURNAL R.H.S. 59, p. xlv.)

\***Narcissus 'Pentewan.'** A.M. March 24, 1936, as a variety for cutting from the open for market. Raised and sent for trial by the late P. D. Williams. This *incomparabilis* variety (Division 2A) was Highly Commended on March 5, 1935. (See Daffodil Year Book, 1935, p. 166.)

\***Narcissus 'St. Mabyn.'** A.M. March 24, 1936, as a variety for cutting from the open for market. Raised by the late P. D. Williams and sent for trial by Mr. J. Chapple, Chiverton. An *incomparabilis* variety (Division 2A). Vigorous. Stem 20 inches thick. Flower well posed. Perianth  $3\frac{1}{2}$  inches diameter, segments broad, overlapping for half their length, golden-yellow. Corona  $\frac{4}{8}$  inch deep, 1 inch wide, frilled, orange. Free flowering, opening at Gulval from March 7.

\***Narcissus 'White Nile.'** A.M. March 24, 1936, as a variety for cutting from the open for market. Raised by The Brodie of Brodie and sent for trial by Messrs. Barr, King Street, Covent Garden, W.C. 2. This giant *Leedsii* variety (Division 4A), flowering at Gulval from March 5, received an A.M. as a variety for exhibition on April 11, 1922, and as a variety for market and for cutting on March 24, 1925. (See JOURNAL R.H.S. 48, p. ciii, and 51, p. lxxii.)

\* Award after trial in open.

\***Narcissus 'Winter Gold.'** A.M. March 10, 1936, as a variety for cutting from the open for market. Raised and sent for trial by Messrs. Barr. Yellow Trumpet variety (Division 1A). Vigorous. Stem 22 inches; thick. Flower well posed. Perianth  $3\frac{3}{4}$  inches diameter, segments overlapping at the base, slightly twisted, deep gold. Trumpet 2 inches deep,  $1\frac{3}{4}$  inch wide, mouth expanded and frilled, deep gold. Free flowering, opening at Gulval from February 18.

**Primula leucochoa.** A.M. May 19, 1936. From Lord Aberconway, Bodnant. A species belonging to an extensive Western Chinese series of robust, purple-flowered Nivalid Primulas. The plant exhibited was several years old and completely filled a large pan with its tufts of lanceolate leaves, white-farinose beneath. The pendent, rosy-purple flowers are borne in clusters of ten to twenty on stout scapes 10 inches high.

**Puya alpestris.** A.M. May 19, 1936. From Messrs. Elliott, Stevenage. A very striking Bromeliad suitable for the cool greenhouse. The tufted leaves are 1 foot long, stiff and spiny-toothed. The inflorescence, which reaches a height of 3 feet, has about a dozen spreading branches, each bearing numerous three-petalled flowers opening bluish green and passing to a dusky blue-black.

**Rhododendron × 'A. Bedford.'** A.M. June 9, 1936. A hardy hybrid of unknown parentage, from Lionel de Rothschild, Esq., Exbury House, Southampton. Trusses compact, pyramidal, up to 6 inches long, of eleven to fourteen flowers. Corolla spreading,  $3\frac{1}{2}$  inches wide by  $1\frac{1}{4}$  inch long, the lobes equalling the tube, pale mauve in the tube and slightly darker on the lobes, with dark rose-madder to nearly black markings within on the upper side of the tube. Leaves smooth, shiny, bright green above, paler below, oblong, up to  $6\frac{1}{2}$  inches long by  $2\frac{1}{2}$  inches wide.

**Rhododendron × 'Lady Bessborough' var. 'Roberte.'** F.C.C. June 9, 1936. From Lionel de Rothschild, Esq. A floriferous plant with small leaves, about 3 inches long, similar in form to those of *R. × 'Lady Bessborough,'* described in JOURNAL R.H.S., 59, p. xxxviii. Flowers rose-pink speckled red within on the lower side at the base of the tube. Trusses loose of six to seven flowers up to 6 inches across.

**Rhododendron × 'Lady Catherine.'** A.M. July 7, 1936, as a hardy flowering plant, from Sir John Ramsden, Bulstrode, Gerrards Cross, Bucks. The loose bracteate trusses, up to 9 inches diameter, contain about ten funnel-shaped, slightly fragrant, flushed rose flowers with rusty speckling within on the lower side, the corollas up to  $3\frac{1}{2}$  inches wide by  $2\frac{1}{2}$  inches long; leaves oval, dull dark-green above, paler beneath, up to  $5\frac{1}{2}$  inches long by 2 inches broad. Notable chiefly on account of its late flowering period.

**Rhododendron × 'Master Dick.'** A.M. June 9, 1936. From J. J. Crosfield, Esq., Embley Park, Romsey, Hants. The result of a cross between *R. Griersonianum* and *R. 'Don X,'* with large spherical

\* Award after trial in open.

trusses, up to 7 inches in diameter, of twelve to thirteen carmine-scarlet, funnel-shaped flowers, up to 4 inches wide by 2 inches long, with brownish speckling within on upper corolla lobe. The smooth lanceolate leaves, up to  $6\frac{1}{2}$  inches long, are dull green above and paler below.

**Rose 'Chaplin's Triumph.'** A.M. June 30, 1936. From Messrs. Chaplin, Waltham Cross. A very sweetly scented crimson Hybrid Tea variety of good form and substance with small foliage.

**Rosa multibracteata.** A.M. June 30, 1936. From Mrs. Hiatt Baker, Almondsbury, Glos. A pretty Western Chinese species with chestnut-coloured branchlets bearing small leaves, each with seven to nine doubly-serrate leaflets, and clusters of flat rounded flowers of a very attractive, rich pink colour and agreeable fragrance. Ovoid, orange-red fruits follow the flowers.

**Schizophragma integrifolium.** A.M. June 30, 1936. From Mrs. Hiatt Baker. A handsome climbing shrub, useful as a wall plant in favoured localities. The leaves are ovate-oblong and obscurely serrate. The inconspicuous creamy flowers are borne in large, flat clusters, but the chief attraction of the plant is in the large greenish-white 'bracts' which are developed around the inflorescence. Each of these is the single sepal of a sterile flower at the tip of one of the main branches of the inflorescence.

## THE AWARD OF GARDEN MERIT.—XXXV.\*

By F. J. CHITTENDEN, F.L.S., V.M.H.

207. CLEMATIS  $\times$  JACKMANNII.*Award of Garden Merit, July 28, 1930.*

The story of *Clematis*  $\times$  *Jackmannii* is told in MOORE and JACKMAN'S book, *The Clematis*, published in 1872. Seed, said to be the result of crossing *C.*  $\times$  *Hendersonii* with *C. lanuginosa*, was sown at Mr. GEORGE JACKMAN'S Woking Nursery in 1860 and the resulting seedlings flowered in 1862. We have used the expression "said to be," for it has been claimed that identical plants have been collected in Japan or obtained from Japanese gardens. The statements are not mutually exclusive, but there is no doubt that the plant was raised at Woking from seed.

Of the parents *C. lanuginosa* is a native of Ningpo, where it was collected by ROBERT FORTUNE when collecting for our Society in 1850, while *C.*  $\times$  *Hendersonii* is itself a hybrid, the supposed parents being the widely distributed species *C. Viticella* and *C. integrifolia*, both of which occur wild in Europe. *C.*  $\times$  *Hendersonii* was raised in Messrs. HENDERSON'S Nursery at St. John's Wood in 1830 and like one of its parents, *C. integrifolia*, it dies down to the ground every winter.

*C. Jackmannii* flowers from June to October on the wood of the current year and is a vigorous grower up to ten feet or so in height. It should be pruned back in early spring, not into the old wood, but so as to leave about a foot of the growth of the preceding year.

The original seedlings had flowers about four or five inches across and were of a rich violet purple; other varieties have been raised with large flowers and six instead of four sepals, but all alike are extremely floriferous, and strong growing.

In common with most of the large-flowered varieties of *Clematis*, *C.*  $\times$  *Jackmannii* is apt to die off suddenly for no apparent reason. This is sometimes attributed to the fact that these plants are usually propagated by grafting, but this is not likely to be the cause, for as a rule, the union being buried, by the time the plant reaches the garden it is on its own roots. Some investigators have discovered a fungus on the stems of plants which die thus suddenly, but there seems little doubt that protection of the basal part of the stem by planting it so that other plants shade it is an aid to the avoidance of the trouble.

\* The notes on the first hundred plants to receive the Award of Garden Merit have been collected from our JOURNAL, vols. 47 to 53, and published as a pamphlet, price 1s. For subsequent notes see vol. 54, pp. 218 and 423; 55, pp. 121 and 276; 56, pp. 80 and 245; 57, pp. 65 and 354; 58, pp. 171 and 400; 59, pp. 131, 308, 360, 406 and 449; 60, pp. 89 and 545; and 61, pp. 94, 138, 225, 265 and 298.

This is not usually difficult to contrive even when the Clematis is intended to climb over an arch or pergola, still less when planted against a fence or wall or so as to trail over a hedge or bush. *C. × Jackmannii* is hardy enough to do well on any aspect.

208. CLEMATIS TANGUTICA.

*Award of Garden Merit, April 16, 1934.*

*Clematis tangutica* is a native of Western China and the Pamirs from whence specimens were described in 1818, and it reached this country from St. Petersburg in 1898, but did not become at all common until after the fine form called var. *obtusiuscula* was raised from seed collected by PURDOM in Western Kansu, grown at Wisley, and distributed in quantity from there to our Fellows from 1919 onwards. The Award of Merit was given to it on September 23, 1920.

It is the best of the yellow-flowered species in cultivation and worthy of being more widely grown than it is. It is quite easily raised from seed, and seeds of the better form come true.

It grows about 10 feet high, the grey-green, more or less downy, toothed leaves being sometimes entire, sometimes two- or three-lobed. The flowers are produced singly on downy stalks 4 to 6 inches long in late summer and autumn. They are more or less bell-shaped, rich yellow, downy at the edges and on the backs of the four sepals which are about 2 inches long, in the best form rather roundly ovate, but in the type pointed and smaller. Like our wild *C. Vitalba* the fruits are terminated by feathery styles and these add to the attraction of the numerous yellow flowers.

*C. tangutica* is perfectly hardy, will grow in any good ordinary soil, is excellent as a climber for a wall, better when scrambling over suitable bushes and perhaps best when allowed to trail at will over the earth, the hanging bells and feathery fruits standing, scattered here and there above the grey green carpet of leaves.

The type form is figured in the Botanical Magazine, t. 7710.

## BOOK NOTICES.

"The Book of the Mushroom." By A. Defries. Svo. 130 pp. (Methuen, London, 1936.) 5s. net.

This book is written by a market grower of experience in the cultivation of the edible mushroom. In a statement on the publisher's jacket it is said to contain instructions for the raising of a profitable crop on either a large or small scale. The introductory chapter tells us that it was written so as to reply more fully to enquiries by numerous correspondents and also as an attempt to explain differences in opinion among experts, thus enriching the literature in the light of the writer's experience.

In chapter 2 we are given a description of the mushroom and of its place in the plant world, this being followed by chapters on suitable growing sites and soils, buildings and building material, conditions most suitable for the production of good crops, and the adaptation of various types of building for mushroom growing. Plans of the general lay-out and detailed drawings for the construction of the latest scientific type of growing shed are supplied. We then read about the treatment of the manure, making of beds, spawning, casing and care of the beds, until we are told how to pick, how to pack, and even how to exhibit the produce. One chapter tells us how to grow profitable crops by using the manure from the spent (exhausted) beds. A most interesting section is that dealing with marketing and costings—this is an aspect of the subject not often dealt with by writers. The last chapter gives eighteen different recipes for cooking mushrooms.

The free and easy style of the book makes for pleasant reading, but the arrangement of the subject-matter is not orderly. Information under many sub-headings is very scattered and it is not easy to refer to a particular point at short notice. It is therefore astonishing to find that there is no index.

Nevertheless there is some valuable advice in the book, the text is easy to read and the illustrations are good. Difficulties likely to be encountered as well as the different opinions on such problems put forward by scientific and other workers are told in a frank and straightforward manner. Despite the fact that in many cases the author has not offered solutions to these difficulties we feel that there has been no lack of endeavour to solve them.

It is clear that the edible mushroom when under conditions of intensive cultivation sometimes behaves in a most bewildering manner. Readers of this book will realize that there is still much to be learnt about the correct growing conditions and requirements of this crop.

"Who Loves a Garden." By Muriel Marston. Svo. 241 pp. (Methuen, 1936.) 7s. 6d.

A readable book with notes following the months and giving in a chatty style the thoughts and doings in the author's garden and others, with cursory observations on birds and beasts—some of them in the garden, or outside. The illustrations produced by the offset process are soft and pleasing.

## NOTES AND ABSTRACTS.

*Adenophora morrisonensis* Hayata. By E. Milne-Redhead (*Bot. Mag.*, t. 9444; May 1936).—Native in Formosa. A perennial herb of variable size, up to 16 inches high, with simple stems bearing terminal racemes of purplish-blue campanulate flowers up to 1 inch long and narrow linear-lanceolate serrulate leaves. Apparently hardy, but not yet thoroughly tested.—*M. S.*

*Aloe brevifolia* Mill. (*Flow. Pl. S. Afr.*, t. 604; January 1936).—Described by Miller in *Gard. Dict.*, ed. 8 (1768), n. 8; and *Fl. Cap.*, vol. vi., p. 310, but no locality was given at that time. It was later illustrated by de Candolle and Redouté in 1790 and 1799, and figured in Lindley's *Bot. Reg.* in 1826. It is now reported from Bonnievale, Caledon, Bredasdorp, Riversdale, Hermanus, and elsewhere in the south-western districts of the Cape; a species with highly coloured variegated broadly lanceolate leaves.—*M. S.*

*Aloe Broomii* Schönk. (*Flow. Pl. S. Afr.*, t. 605; January 1936).—Described in *Rec. Albany Mus.*, vol. ii., p. 137, this species is common on rocky slopes in the central and north-western districts of the Cape Province, and in the hilly parts of the Orange Free State. It has a dense rosette of acuminate ovate leaves and a single dense spindle-shaped raceme of small green flowers.—*M. S.*

*Aloe Ecklonis* Salm. (*Flow. Pl. S. Afr.*, t. 609; January 1936).—A flat grass-veld plant of wide distribution in the eastern Transvaal, northern Natal, eastern Orange Free State, Basutoland, and elsewhere, with erect lanceolate narrow leaves and dense corymbs of yellowish-green to reddish-brown flowers. About 2 feet 2 inches high.—*M. S.*

*Aloe integra* Reynolds (*Flow. Pl. S. Afr.*, t. 607; January 1936).—A new species from the eastern Transvaal, with smooth, entire, slightly attenuate variable leaves and broadly pyramidal racemes of lemon flowers. About 2½ feet high.—*M. S.*

*Aloe mutans* Reynolds (*Flow. Pl. S. Afr.*, t. 602; January 1936).—A new stemless succulent species from the northern Transvaal with a dense rosette of broadly oblong, toothed, brown leaves with irregular green markings and a dry twisted tip, and many-flowered cylindric racemes of tubular orange-yellow to rose-pink flowers which yellow after flowering. The plant is 6 to 7 feet high.—*M. S.*

*Aloe pluridens* Haw. (*Flow. Pl. S. Afr.*, t. 610; January 1936).—A species common in the Albany district and near Fort Beaufort and Uitenhage, with a long stem about 6 feet high bearing a dense rosette of long linear-lanceolate toothed leaves and dense racemes of spirally-arranged red flowers with green tips.—*M. S.*

*Aloe pongolensis* Reynolds (*Flow. Pl. S. Afr.*, t. 603; January 1936).—A new species from the eastern Transvaal, with narrow lanceolate leaves armed on their margins with remarkably deflexed teeth, and lax racemes of dull to glossy red flowers. The species is variable in size, colour and shape.—*M. S.*

*Aloe recurvifolia* Groenewald (*Flow. Pl. S. Afr.*, t. 601; January 1936).—This plant, found on rocky ledges in the Pilgrims Rest district, closely resembles *A. sessiliflora*. It has a simple stem up to 6½ feet high bearing dense rosettes of long strongly channelled and recurved leaves up to 4½ feet long with small red marginal teeth, and long dense spikes of yellow flowers, the plant being about 10 feet high.—*M. S.*

*Aloe speciosa* Baker (*Flow. Pl. S. Afr.*, t. 606; January 1936).—A handsome species from the Albany district with an oblique dense rosette of long narrow leaves up to 2 feet 8 inches long by 2½ inches broad, and dense narrowly conical racemes; the flowers are deep rose when young, and white with green stripes when mature. About 6 feet high.—*M. S.*

*Aloe Vanbelenii* Pillans (*Flow. Pl. S. Afr.*, t. 608; January 1936).—Growing on flat rocky faces 8 miles north of Mahlabatini. Forms a dense bush up to 2 feet high, with long linear-toothed arcuate leaves and loose cylindrical racemes of light orange flowers.—*M. S.*

*Campanula Formanekiana* Degen and Dörfner. By E. Milne-Redhead (*Bot. Mag.*, t. 9436; May 1936).—Native of the mountains of Macedonia, parts of Yugoslavia and Greece. A biennial, about 16 inches high when in flower, with white or pale blue flowers about  $1\frac{1}{2}$  inch long, and with the radical leaves in silver-grey rosettes. A hardy plant suitable for the rock garden or alpine house.  
*M. S.*

*Clematoclethra actinidioides* Maxim. By H. K. Airy Shaw (*Bot. Mag.*, t. 9439; May 1936).—Native of Kansu and Szechwan, China. A climbing shrub, hardy in sheltered positions in this country, with axillary fascicles of small white or pinkish flowers from which the long style is exserted, variable ciliate-dentate leaves, and reddish-black berries.—*M. S.*

*Corylus*, History and Classification [*Istoriya i sistematika roda Corylus*]. By E. Gh. Bobrov (*Sovetskaya Bot.*, 1936, pp. 11–36; text figs., 2 maps).—This revision of the hazels distinguishes 19 species; a key and various notes are in Latin, the rest in Russian.—*W. T. S.*

*Decumaria sinensis* Oliver. By J. R. Sealy (*Bot. Mag.*, t. 9429; Feb. 1936).—An almost evergreen hardy climber from China, western Hupeh, and Szechwan, with spherical panicles of small yellowish-white flowers terminating short lateral branchlets on the older branches, climbing by means of aerial rootlets; about 7 feet high by 5 feet wide.—*M. S.*

*Dendrobium hercoglossum* Reichb. f. By V. S. Summerhayes (*Bot. Mag.*, t. 9428; Feb. 1936).—From Annam, Siam, and probably Cambodia, closely allied to *D. linguella* and *D. aduncum*, but with a less prominent mentum and its lip divided into two distinct portions, the lower larger and cup-shaped and the upper triangular, the two separated by a transverse fimbriate lamella. A plant for a warm orchid house.—*M. S.*

*Echeveria*, The genus [*Zur Kenntnis der Gattung Echeveria*]. By Karl von Poellnitz (*Fedde, Rept.*, vol. xxxix., pp. 193–270; 1936).—In this account of the genus *Echeveria*, an American group now kept distinct from the African group *Cotyledon*, ninety species are described in German and a key provided to distinguish them.—*W. T. S.*

*Forsythia ovata* Nakai. By J. R. Sealy (*Bot. Mag.*, t. 9437; May 1936).—Native of Korea. It flowers earlier than any other species of *Forsythia* in cultivation; has yellow flowers from  $\frac{1}{2}$  to  $\frac{3}{4}$  inch diameter, broadly ovate, acuminate leaves and pale yellowish- to greyish-brown young shoots. A hardy and easily grown shrub attaining about 5 feet in height.—*M. S.*

*Fuchsias*, Check List of. By E. O. Essig (*Amer. Fuchsia Soc.*, 23 pp., 1936).—An attempt to list all the species and varieties which are or have been in cultivation; it includes about 2,000 names, the introducer or raiser, the date of introduction and the colour and form (whether single or double) of the flower being given whenever recorded, and it concludes with 204 references to articles or catalogues from which information has been compiled.—*W. T. S.*

*Glaucidium palmatum* Sieb. and Zucc. By H. K. Airy Shaw (*Bot. Mag.*, t. 9432; Feb. 1936).—A perennial tuberous-rooted herb from Japan with large pale mauve apetalous flowers borne singly on an unbranched bifoliate stem, the leaves palmately 5–7-lobed. At present an alpine house plant.—*M. S.*

*Hymenanthera crassifolia* Hook. f. By B. L. Burt (*Bot. Mag.*, t. 9426; Feb. 1936).—A hardy shrub from New Zealand, about 6 feet high, with numerous pure white berries which darken at the base on ripening. Some of the small spirally arranged leaves are retained over the winter.—*M. S.*

*Kalanchoe Blossfeldiana* von Poellnitz. By H. G. Schweickerdt (*Bot. Mag.*, t. 9440; May 1936).—Native in Madagascar. A succulent, glabrous perennial up to 12 inches in height with many-flowered umbel-like cymes of scarlet flowers and oblong or ovate-oblong, smooth, crenate leaves up to 3 inches in length.  
*M. S.*



**Narcissus Watieri** Maire. By W. B. Turrill (*Bot. Mag.*, t. 9443; May 1936).—Native of the Great Atlas Mountains, Morocco. A dwarf species with narrowly linear leaves up to 8 inches long appearing with the solitary flower, which is nearly erect, has white spreading petals, a white cup-shaped corona, and is about  $2\frac{1}{2}$  inches diameter. A hardy plant.—*M. S.*

**Palms, List of American.** By B. E. Dahlgren (*Field Mus. Nat. Hist. Chicago, Publ. Bot.*, xiv.; 456 pp.; 1936).—This list gives in alphabetical sequence all the scientific names applied to American palms with cross-references from synonyms to accepted names and vice versa, a list according to countries, and a list of vernacular names (pp. 317–396), with the species to which they have been applied.—*W. T. S.*

**Phalaenopsis Denevei** J. J. Smith. By V. S. Summerhayes (*Bot. Mag.*, t. 9445; May 1936).—Native in Dutch West Borneo. An epiphytic herb with dark bluish-green, more or less upright or pendulous cylindrical leaves up to 30 inches long, and fascicles of three to fifteen flowers arising from below the leaves. The sepals and petals of the scented flowers are slightly reflexed, light greenish-yellow to dark yellow-brown with paler borders, and the tri-lobed lip is marked with crimson, yellow, and white. A stove-house plant requiring careful treatment.—*M. S.*

**Picea rubens** Sargent. By W. Dallimore (*Bot. Mag.*, t. 9446; May 1936).—Native of eastern North America from Prince Edward Island, Nova Scotia, and the valley of the St. Lawrence in the north to North Carolina and West Virginia in the south. A slow-growing conifer from 65 to 90 feet tall, with small purple or greenish-purple young cones which become reddish-brown on maturing, up to  $1\frac{1}{2}$  inch long; leaves bright green when young, lustrous dark yellowish-green later. Hardy in Great Britain.—*M. S.*

**Rhododendron chrysodoron** Tagg. By J. Hutchinson (*Bot. Mag.*, t. 9442; May 1936).—Native in western Yunnan. A small shrub with terminal trusses of bright canary-yellow, unmarked, widely campanulate flowers, the few elliptic ciliate-margined leaves subtending them in a rosette. Hardy in south and west Britain.—*M. S.*

**Rhododendron longesquamatum** Schneider. By J. Hutchinson (*Bot. Mag.*, t. 9430; Feb. 1936).—A hardy shrub from China and Szechwan, about 9 feet high, with crowded subverticillate evergreen leaves closely reticulate below, with minute glands and a thick and densely pubescent midrib and shoots; flowers produced in June in loose terminal trusses of seven to ten, bright pink with crimson spots within the upper segments.—*M. S.*

**Salvia, Indian and Tibetan species of [Revision der indischen und tibetanischen Arten der Gattung Salvia L.]** By Elfriede Peter (*Fedde, Repert.*, vol. xxxix., pp. 173–186; 1936).—In this revision of the Indian and Tibetan *Salvias* nineteen species are recognized, several being new, among them *S. Wardii* (F. K. W. nos. 6172, 10591), with large blue white-lipped flowers, related to *S. hians*; the plant figured in *Bot. Mag.* t. 6517 is distinguished from typical *S. hians* as var. *exannulata*.—*W. T. S.*

**Salvia japonica and allied species [Revision der Gruppe der Salvia japonica Thbg.]** By Elfriede Peter (*Acta Horti Gotob.*, vol. x., pp. 55–69; illus.; 1936).—This revision of the Chinese *Salvias* which have been confused with *S. japonica* supplements the revision of the genus as it occurs in China and east Burma published in 1934 in *Acta Horti Gotob.* (*Medd. Göteborgs Bot. Trädg.*), vol. ix., pp. 101–145; distinguishes nine species.—*W. T. S.*

**Saxifraga signata** Engler and Srmscher. By J. R. Sealy (*Bot. Mag.*, t. 9441; May 1936).—Native in north-western Yunnan and western Szechwan. A well-marked species, 3 to 7 inches high, allied to *S. sanguinea*, but with longer rosette leaves and larger flowers with petals nearly  $\frac{1}{2}$  inch long, pale yellow within on the upper half and greenish-yellow with bands and blotches of red on the basal half, and flushed dull purple without. It has not set seed in England, and its survival in cultivation here is uncertain.—*M. S.*

**Sedum. New Bulgarian [Über eine neue Sedum—Art aus Bulgarien].** By F. Hermann and B. Stefanoff (*Notizbl. Bot. Gart. Berlin-Dahlem*, vol. xii., pp. 562–564; illus.; 1935).—The authors describe and distinguish from the other members of the group Cincinnisedum (*S. acre*, *S. boloniense*, *S. Sartorianum*, *S. tuberiferum*,

*S. annuum*) a new species, *S. Zollikoferi*, with spatulate bright green leaves 5-10 mm. long and small yellow flowers, introduced into cultivation from the Ali-Botusch mountains above Paril, east Macedonia, by Herr Zollikofer of Sofia.—*W. T. S.*

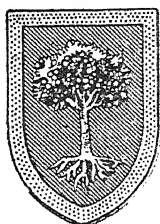
***Synthyris stellata*** Pennell. By J. R. Scaly (*Bot. Mag.*, t. 9427; Feb. 1936).—A perennial herb differing little from *S. missurica* (= *S. reniformis* of gardens), but with acuminate-cuspidate teeth to the leaves, more conspicuous cauline leaves and bracts, and longer fruiting pedicels. Native in the north-western United States.—*M. S.*

***Tinaria delphinioides*** Gay. By W. B. Turrill (*Bot. Mag.*, t. 9438; May 1936).—A somewhat critical species of wide distribution in Spain and Portugal, attaining about 20 inches in height, with small linear-subulate, obtuse or sub-acute leaves on the fertile stems, and linear-lanceolate or narrowly elliptic leaves on the sterile stems; the long-spurred flowers are purple-violet when young and pale lilac when older. An easily grown, hardy plant.—*M. S.*

***Totus argaeus*** (Griseb.) Boiss. By W. B. Turrill (*Bot. Mag.*, t. 9431; Feb. 1936).—A perennial herb of bush-like habit, 12 to 20 inches high, with numerous bright yellow flowers and small finely ciliate leaflets. Native in the Balkan Peninsula, and difficult to cultivate in this country, where it should be grown outside in slight shade.—*M. S.*

# JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

Vol. LXI



Part 9

September 1936

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## THE PRESERVATION OF VEGETABLES.

By MISS E. W. JAMESON, N.D.H.

[Read July 21, 1936; Mr. NOEL SUTTON in the Chair.]

A WELL-STOCKED garden should provide fresh vegetables for the house throughout the whole year, and fresh vegetables have a higher food value than preserved—especially in the case of those which are eaten raw. There are some vegetables, however, such as asparagus, peas and broad beans, which have a comparatively short season, and others, such as carrots, which are very much nicer eaten young than when fully grown.

Again, in many gardens, particularly when weather conditions are unfavourable, there is apt to be a shortage of fresh vegetables in the late spring.

For all these reasons then, we are glad to be able to use vegetables which have been preserved, and to enjoy a continuous supply of young and tender vegetables, and some of the choicer kinds which may not be in season in the garden.

Food preservation is an ancient art and reference is made to it even in the Old Testament (Lev. xxv. 20–22), but until modern times probably the only methods used were drying, smoking, pickling in salt and preserving in sugar.

### DRYING.

Vegetables were dried in large quantities during the Great War, the process consisting simply of extracting the moisture in a warm atmosphere so that decomposition could not subsequently take place. Runner or French Beans, for example, can be dried at home by scalding

them first in boiling water and then spreading them on trays and drying in an oven at a temperature of 120° F. increasing to 160° F. When quite crisp the beans are cooled for 12 hours and stored in corked jars.

#### SALTING.

Salt is still used to preserve some vegetables. Runner Beans can be packed in salt ( $\frac{1}{4}$  weight of salt to beans) in a crock, and will keep without any change, except in colour, for winter use.

If a smaller quantity of salt is used, *e.g.* 5 per cent., then a partial fermentation takes place. The sugars of the vegetable are changed, and acids, chiefly lactic acid, produced. The acid stops further fermentation and a product of special flavour is obtained. This process takes place in the making of silage on the farm and in the making of *saur-kraut*—the sour cabbage which is eaten in Northern European countries—especially Germany.

The curing of vegetables for pickle manufacture is a similar process. The vegetables are put into a brine of, say, 10 per cent. strength, and when a certain amount of fermentation has taken place, transferred to a stronger brine, and finally made up into pickle with vinegar. For domestic use a shorter method, however, is used, the vegetables being brined for twenty-four hours only.

#### BOTTLING AND CANNING.

All these methods which have been mentioned, however, have this disadvantage—they do not produce an article which is, in flavour and appearance, sufficiently like the original fresh vegetable. Fortunately, at the present time we are able to preserve vegetables which taste and look almost like those which have been freshly gathered from the garden.

The methods referred to are, of course, Bottling and Canning, similar in that they are both methods of preservation—actual sterilization in this case—by heat.

Curiously enough, when the bottling process was first discovered, by a Frenchman, NICHOLAS APPERT, in 1810, the scientific principles underlying its success were not known. APPERT believed that the exclusion of air from the jars after cooking was completed was the reason why the foods kept satisfactorily. Bacteria were unknown and decomposition was thought to be the result of purely chemical agencies.

We now know that micro-organisms such as yeasts, moulds and bacteria are responsible for the changes which take place in foods which “go bad,” and that if these are killed, and sufficient care is taken to prevent fresh contamination, foods can be made to keep for an indefinite time.

In the case of fruit bottling, the process is easy. Fruit contains acid, which is in itself a preservative. The micro-organisms which bring about fermentation and spoilage of fruit are yeasts and moulds, which are killed at a comparatively low temperature, *e.g.* 165° F. If,

therefore, fruit is heated to this temperature, and the jar effectively sealed, no fermentation will take place.

When we turn to vegetables, however, the problem is greater. Vegetables do not contain the acid which is so useful in the case of fruit, and they are contaminated, not merely with yeasts and moulds, but with bacteria from the soil. Bacteria, which are useful and essential inhabitants of the soil, can bring about very unpleasant changes in foods. Their action is putrefactive, and since vegetables contain proteins, these are attacked and sometimes poisonous by-products produced. Bacteria, too, form hard-coated spores or "seeds" which are extraordinarily resistant to heat and cold and many chemicals. Some of these spores, for instance, are not killed by being boiled for half an hour.

#### BOTTLING.

When bottling vegetables at home three things are essential :

- (1) The very thorough cleansing of the vegetables.
- (2) The application of sufficient heat to bring about sterilization.
- (3) The addition of some acid to the brine.

The following methods for bottling Peas can be followed with slight variations for any other vegetables.

#### *Method of Bottling Peas.*

1. Wash the pea pods before shelling in water to which enough permanganate of potash has been added to make it a deep rose colour.
2. Shell the peas and tie loosely in muslin or place in a vegetable boiler.
3. Blanch, *i.e.* dip into boiling water for 1 to 2 minutes.
4. Transfer at once to cold water and cool quickly.

The blanching and cold dip help to set the colour, and also complete the cleansing. The vegetables shrink slightly and become more pliable, and so are more easily packed.

5. Pack, not too tightly, into vacuum jars to within  $\frac{1}{4}$  inch of the top and cover with the following solution :

2 oz. salt.  
5 fluid oz. of lemon juice.  
4 oz. sugar.  
1 gallon water.

Boil the water, add lemon juice, salt and sugar, and cool before using. The sugar should be omitted when bottling vegetables other than peas.

6. Place on rubber ring (which must be new), lid and screw collar. Loosen screw collar half a turn.

7. Put the bottles in the sterilizer covered with warm water, bring the water to boiling point and boil  $1\frac{1}{2}$  hours.

If necessary, at the end of  $1\frac{1}{2}$  hours the bottles may be filled up with boiling brine, the screw collars tightened and the jars returned to the sterilizer and boiled for a further 20 minutes.

8. Next day remove the screw collars and test the vacuum by lifting jars by the glass lid.

Bottled vegetables should be stored in a cupboard which is cool, dark and dry. When required for use they may be heated in the bottle, or drained, and placed in a colander over a saucepan of boiling water for about half an hour.

There are other methods of bottling vegetables, but they are either more troublesome and less certain, or are only practicable in a few homes.

For instance, the vegetables may be packed in a brine without lemon juice and instead of being boiled on one day for  $1\frac{1}{2}$  hours, boiled for 1 hour on three successive days. This is called the intermittent method of sterilization. It involves more trouble and a greater expenditure on fuel.

All bacteria and their spores are killed, *i.e.* complete sterilization is effected, if the produce can be heated to  $240^{\circ}$  F. for 20 minutes. This is possible when steam pressure cookers are available, and is the normal practice in commercial plants, but not very many private households possess the necessary cookers.

#### CANNING.

There is now on the market a machine\* which can be screwed on to the kitchen table at home, which enables anyone without any previous experience to seal tin cans and so to deal with large quantities of fruit and vegetables in a short time.

No soldering is necessary, and the tins being light in weight and unbreakable are more easily stored or transported than are bottles. Since the can is hermetically sealed before sterilization, the brine is filled boiling into the cans and not cold as in bottling. The following points briefly show the method.

##### *Method of Canning Peas.*

1. Prepare and blanch as for bottling.
2. Fill into cans.
3. Cover with *boiling* acid brine (proportions as for bottling).
4. Seal can immediately.
5. When a batch of cans is sealed, place in a vessel of boiling water. Bring again to the boil and boil  $1\frac{1}{2}$  hours.
6. Remove cans from sterilizer and cool in bath of cold water.
7. Dry and label.

There are therefore many ways open to the housewife by which she may preserve vegetables for home use. The most practicable one is bottling. It can be carried out in any kitchen with no special apparatus beyond the vacuum jars and a vessel in which to boil them, and the finished product is attractive and most palatable.

\* The British Home Canner. *Makers* :—Metal Box Company Ltd., Perry Wood Factory, Worcester. Price, £4 8s. 6d.

## CONTRIBUTIONS FROM THE WISLEY LABORATORY.

LXXVIII.—THE OXIDATION OF SOIL HUMUS : PRELIMINARY TRIALS  
WITH POTASSIUM PERMANGANATE.

By C. B. GREENING, B.Sc. (AGRIC.).

THE practical value of stable manure as a means of establishing and maintaining the fertility of garden soils is so widely recognized as to require no elaboration. Nevertheless an examination of some of the reasons underlying the success of this form of manuring is fruitful in that it reveals a new and simple method of soil treatment of which advantage has not hitherto been taken.

When stable manure is in the heap it is, of course, undergoing a process of decomposition. On the manure being transferred from the heap to the soil, this process of decomposition continues, producing the beneficial effects upon soil tilth and plant growth well known to all gardeners.

Broadly speaking, therefore, the presence of an adequate supply of decomposing organic matter in the soil may be taken as the natural basis of soil fertility.

The application of stable manure to the soil is of importance in two ways. In the first place, it provides the soil with a further supply of organic matter ; whilst, secondly, this organic matter, being in a state of decomposition itself, promotes the process of decomposition of humus already present in the soil.

A variety of materials, when applied to the soil, will increase its supply of organic matter, but a simple and economical means of promoting the decomposition of soil humus, in a manner closely allied to the action set up by stable manure, is obviously of wide practical value.

In pure organic chemistry, the fact has been known for many years that potassium permanganate will decompose organic matter through the formation of nitric acid, but hitherto this property of potassium permanganate has not apparently been utilized in soil chemistry for the benefit of gardeners.

Accordingly, in 1931, the writer began some garden trials with the object of ascertaining, in practice, whether or not an application of potassium permanganate to the soil would decompose the organic matter already present in the soil, through the formation of nitric acid, thus causing the production of nitrates and other plant foods within the soil itself in quantities sufficient to stimulate plant growth. The procedure adopted in these tests was simple.

One teaspoonful ( $\frac{1}{4}$ -oz.) of potassium permanganate was placed in 2 gallons of water contained in an ordinary watering-can. The

contents of the watering-can were stirred with a stick and the crystals given time to dissolve. The solution was then sprinkled over an area of 3 square yards of lawn.

Almost immediately earthworms came to the surface, where some of them died, whilst others made some attempt to return underground. The worms were brushed up and thrown away. It was also observed that the application had a rapid effect upon the patches of moss which were present in the turf. The moss first showed signs of withering and in a few days' time was evidently dead.

Within a week from the time of application the grass showed signs of manurial benefit derived from the treatment. The herbage on the treated section was darker green in colour and more vigorous in growth than on the untreated section of the lawn.

An example of the manurial effect produced by potassium permanganate is provided by the figures obtained from the following simple experiment carried out by the writer on a private lawn during 1935-36 :—

*Result of Experiment on Lawn at East Molesey, Surrey.*

*Soil* : Alluvial loam.

*Size of plots* : Three square yards each.

*Treatment* :  $\frac{1}{4}$ -oz. permanganate of potash dissolved in 2 gallons of water and applied to 3 square yards.

*Applications* : The above treatment was given to both of the treated plots on three dates, namely, 19/11/35, 29/1/36 and 5/3/36.

*Cutting and Weighing* : The plots were cut on May 18, 1936, and weighed on May 19, 1936, when the grass was green but reasonably dry.

*The following result was obtained* :—

<i>Plot</i>	<i>Weight of Grass (oz.).</i>
A. Untreated	9
B. Treated	32
C. Untreated	21
D. Treated	32

*Note.*—In considering these figures, it is suggested that plot A should be disregarded, as it received far less sunshine than did the other plots and also was more trodden during the winter months.

As conditions for growth on plots B, C, D were equally good for each of these three plots, the difference in the weights obtained between treated and untreated plots may be regarded as fairly reflecting the effect of the treatment given.

An interesting practical demonstration of the improvement of turf by means of potassium permanganate has also been made on the ground of the East Molesey Cricket Club, where the soil consists of an alluvial loam. In the autumn of 1935 a strip, measuring 18 yards by 3 yards, was treated with a solution applied at the rate of  $\frac{1}{4}$ -oz. of permanganate dissolved in 2 gallons of water to 3 square yards.



A large number of earthworms came to the surface immediately and were brushed up.

Within a week from the time of application, it was evident that the turf had received marked manurial benefit from the treatment. The grass on the treated strip was growing more vigorously and was of a darker green than that on the untreated turf. This distinction was quite clearly maintained throughout the winter of 1935-36.

In consequence of the success of this autumn application, the Committee decided to have the whole of the area (measuring approximately 30 yards by 60 yards) on which the wickets were to be pitched during the present summer treated in a similar manner. Accordingly, the potassium permanganate solution was applied during March 1936 at the same rate as that used in the autumn. An untreated section measuring 30 yards by 3 yards was left between the main area receiving treatment and the strip which had been treated during the autumn.

The spring application produced results which were comparable to those obtained by the autumn treatment. When the ground was carefully examined during June 1936, the untreated strip was clearly distinguishable by reason of its poorer herbage and less lively growth, whilst no difference was discernible between the areas treated in autumn and spring respectively.

In other practical garden trials which have been carried out by the writer during the last few seasons with potassium permanganate, the growth of radishes, lettuce plants and red currants has been increased by the applications given. In these cases, the solutions have been applied at the same strength as that already quoted and have been thoroughly worked into the first few inches of the surface soil by stirring with a trowel. The effect produced upon the soil tilth has been evidently beneficial whilst the quality of the produce obtained has been excellent.

In view of the promising nature of the preliminary work done, arrangements were duly made this season by the Royal Horticultural Society to enable the writer to carry out further work upon the soil effects of applications of potassium permanganate at Wisley, where trials, under conditions affording adequate scientific facilities, are now in progress.

Work has been begun at Wisley, in the first instance, to investigate the effects of the application of potassium permanganate solutions to lawns, with particular reference to the establishment of data upon the manurial benefit to the herbage and upon the eradication of moss by this treatment.

The experimental scheme being followed at Wisley during the present season is simple. Latin squares, the plots of which are designed to contrast the effects of treatment at various rates of application against "control," are being used in the manurial investigations, whilst the eradication of moss is being tested by treating strips of the lawns with permanganate solutions of differing strengths

in areas of lawns which are notably suffering from the presence of moss.

On June 12, 1936,  $\frac{1}{2}$ -oz. of permanganate was dissolved in 2 gallons of water and applied to an area of 3 square yards in a very mossy patch of lawn at Wisley. On June 16 the moss on this patch had withered and the grass already appeared to show darker green coloration. Another dressing of the same strength was applied to this area on June 18. The treatment was effective in killing the moss.

Details of the progress of the work at Wisley on the manurial effects produced by permanganate of potash by bringing about the decomposition of soil humus may be expected in due course. In general reference to this treatment, however, it is interesting to note at this stage that the properties of potassium permanganate, when applied to the soil in solution, are such that they appear to provide the gardener with a means of bringing three-fold benefit to his soil in one operation. The oxidizing power of the permanganate aerates the soil, which is moistened by the solution which, furthermore, tends to warm the soil by means of the decomposition set up.

In conclusion, it may be mentioned that it is only reasonable to suppose that the continued use of solutions of potassium permanganate would lead, in course of time, to the depletion of the soil of its content of organic matter. A deficiency so created could, however, be made good by applications of organic manure from the heap. With this consideration in view, preliminary work has also been begun, at Wisley, to test the value of potassium permanganate as a means of preparing good organic manure in the heap by bringing about the decomposition of garden refuse of different kinds.

## THE CULTIVATION OF SOME TERRESTRIAL ORCHIDS IN POTS.

By J. COMBER.

When we know more about terrestrial Orchids it may be quite possible to grow many of them in the open air, but while they are still rare in cultivation it is the safest plan to retain them in pots. The question of propagation arises, not because individual plants may be short-lived, but to obtain material for experiment in cultivation and also to perpetuate good forms. Given healthy plants, a considerable increase can be obtained in many instances from offsets. I have never raised any terrestrial Orchids from seed, but I have closely observed the conditions under which the seedlings appear in Nature. For those who wish to propagate terrestrial Orchids from seed it may be mentioned that in *Orchids for the Outdoor Garden*, by A. W. DARNELL, two and a half pages are devoted to "Propagation by Seed."

Under natural conditions seedlings will generally be found where a bare piece of soil has become thoroughly consolidated, though it may be no larger than a huge worm-cast, and by the time the seedlings are apparent either covered with short moss or surrounded with short herbage. The 'Bee Orchid' (*Ophrys apifera*) germinates readily on the South Downs, but the greatest number of seedlings of this plant I ever saw were in a disused brickyard, where the loamy clay was not rich enough for the weeds to overpower them. The seed of *Orchis mascula* finds a congenial nursery on clay or heavy loam banks, provided there is a settled surface on which short moss has formed. *Orchis maculata* does not seem so particular, germinating in moist meadows and on the edges of woodland walks. Moles, worms, beetles and other small animals make miniature seed-beds in the turf to the advantage of the Orchids amongst other plants.

When home-raised seedlings are placed on the market most of the difficulties experienced in the cultivation of terrestrial Orchids will be halved. The plants we grow to-day have not had a fair deal. They have usually been uprooted when in bloom at a season when the fleshy roots are tender and very susceptible to injury. Under favourable circumstances it would be better to mark the plants and return to lift them when the leaves were turning yellow, but this is rarely possible. When collected they can be sent by post in small wooden or stiff cardboard boxes, damp moss being perhaps the best packing medium. Dry Spaghnum moss is light and easily carried pressed into a small compass; moistened it would expand and form excellent packing material. Plants rolled in damp newspaper and packed firmly will sometimes arrive in a green, fresh state after having been from one to two weeks on the journey. Naturally the largest tubers travel best.

On their arrival they should, if possible, be identified or at least divided into groups having similar characteristics and numbered. Four- to six-inch pots are the most suitable and will suffice for five to seven tubers according to their size and the more or less leafy character of the plant. Good drainage is essential. Use thin crocks neatly laid concave side downwards, and cover with small pieces of turf to prevent the finer soil closing the interstices. Heavy loam three-quarters, leaf mould one-quarter, with plenty of coarse sand will form a staple compost, and either ingredient can be increased to suit particular cases. When any species is known to flourish either in peat or chalk soils, a suitable proportion of either can be added. Pot firmly.

After potting stand the plants in a frame or alpine house, and keep any surviving foliage green as long as possible by spraying. Do not water heavily. When all foliage has died down, place the pots on an ash bed in a sunny frame; I have even seen them placed on a vinery shelf without injury. In August or September bring them into a cool house. Spray the pots occasionally with a fine-rosed can, but do not water heavily until growth appears and even then with discretion.

Either care for the plants yourself or interest some one else in their welfare. With a keen interest, observation follows, and though no possible source of information as to their requirements should be neglected, the closest observer is usually the best plantsman.

During the dull months from November until the end of February no shade is required: there is rarely enough sunlight. Sometimes in March a few days of brilliant sunshine will follow a period of dull weather; it is then that slight shade is beneficial, it prevents too sudden evaporation from the soil in the pots and the leaves of the plants. Spotted leaves which gradually turn black and decay often occur after a check of this kind; sometimes the discoloration begins at the base of the leaf, but more often from the point downwards. Whatever the cause, it soon renders the plant unsightly and detracts from the quality of the bloom. Remove and burn any affected leaves. The production of seed is exhausting to the plant and should be avoided unless it is wanted for propagation. When the bloom fades or even before, remove the flower stem, retaining even the smallest leaves. Continue to give every attention until the leaves turn yellow and wither. From then until August or September our method has been to stand them in a sunny house or frame and withhold water until growth appears in October.

The best time for repotting is just before the growth begins in autumn. Most terrestrial Orchids having tuberous roots produce offsets, and when potting, these are easily separated from the parent. Sometimes instead of the large tuber which has flowered successfully for several years a number of smaller plants appear, and it is necessary to grow them on for two or three seasons until the requisite flowering strength is again reached. Such young tubers cannot be expected to resist the dry conditions accorded to those of more substance. Mark the pots so that these plants can be segregated for special treatment.

Newly potted plants should be placed where the soil in the pots does not dry too rapidly, the less water required before growth is apparent the better. It is imperative that the new roots should find the medium in which they have to forage in the best possible condition. A house from which frost is excluded suits most of these Orchids admirably. Just a little warmth in the pipes during dull wet weather is an advantage, as it tends to render the air more buoyant. The pots should be stood on shingle or coal ashes; this assists drainage and keeps the pots naturally moist at the base.

In the above notes I have detailed the treatment accorded to those species of *Orchis* and *Ophrys* and similar genera in my charge. It is by no means the last word in their cultivation, for it is probable that each genus, to say nothing of the species in a genus, requires some variation of the ordinary routine. For instance, among *Orchis* there is *Orchis pyramidalis* with its love of chalky and gravelly soils and *O. maculata* rejoicing in the dampest parts of meadows near shady woodlands. Anyone learning that *O. foliosa* comes from Madeira might suppose that it required a warm sheltered position; instead, it flourishes at Nymans and elsewhere in a border of heavy clay-like loam with water percolating underneath. Again, I do not feel at all sure that the severe drying or baking to which we have subjected our terrestrial Orchids in the past is the best cultural method. We have evidence that they will survive under such a trial: that it is necessarily good for them is another matter. Those who visit their haunts say the soil in which they grow is baked hard and dry during summer by the intense heat of the sun. Even so there is always some moisture rising by capillary attraction, and a plant in a large mass of soil is never quite so dry as one isolated in a pot.

## SOME WINTER PLANTS OF ALGECIRAS.

By Lt.-Col. ARTHUR A. CROOKSHANK, F.R.H.S.

PRESUMABLY Algeciras does not need a letter of introduction or a geographical visiting card to precede it. It was put on the map some years ago by a Conference which made a present of Morocco to the French (and what a present, too, as a glance at the map and at the trade returns will show). More recently, since the development of Morocco by the French, it has become a station on the direct and shortest sea route from France to Morocco. English people, however, look upon Algeciras as a suburb of Gibraltar across the Bay, a place to which officers from "the Rock" go for tea-dances or lunch on Sundays.

There are two walks within a radius of action of one day on foot from Algeciras which stand out in the memory. They both provide very fine scenery of widely different types and different vegetation, and will take you far from the madding crowd, from villages and civilization, but close to Nature. One is along the seaward to the west, and can be continued as far as Farifa (coming back by motor car) and, no doubt, farther also. Here conditions are ideal for the foot-slogger, as a path has been made for the Customs officials (or coast-guards) along the slopes of the mountains, which here drop down into the Straits of Gibraltar. The path is kept in good condition, its edge in the dangerous places being marked by whitewashed stones, as the coast-guards use it at night, indeed much more by night than by day. Every few hundred yards there is a snug little wooden sentry-box, a sentry in uniform armed with death-dealing weapons, and every few miles a square-fronted, whitewashed building, the barracks of these guards and their families, each family apparently consisting of innumerable children all of the same age. All this army is to prevent (or attempt to prevent) the smuggling of tobacco from Gibraltar, where it is almost given away, to Spain by sea. The views from this path are magnificent: in front of you the steep slopes of the hills drop down from the Pelayo range into the sea, or rather the salt-water millrace of the Straits: below you the waves dash themselves against the rocks at the foot of the cliffs: across the water you can see clearly the white houses of Ceuta, and at intervals white, sandy beaches between Ceuta and Tangier against a background of the mountains of North Africa in a serrated ridge; on clear days you can see snow on the highest peaks of the Riff mountains 8,000 to 9,000 feet high, to the east. On the water one sees the "continuous performance" of passing ships in what must be one of the busiest waterways in the world. Here there is not much of a flower show in winter, the vegetation being kept down by the winds in the Straits of Gibraltar, and also by goats.

The other walk provides scenery of a very different character. It

is along a narrow V-shaped ravine with steep sides; a mountain torrent (the river Miel) tumbles along it, and forms at one place a fine waterfall. It is called for that reason "Los Choreros" by the Spaniards. Here the vegetation is luxuriant; both sides of the ravine are covered with trees, shrubs and plants, owing partly to the moisture from the torrent and its numerous small tributaries and partly to the protection from north and north-east winds. The ravine runs east and west, and thus gets warmed up by the morning sunshine.

You would not expect in these conditions to get any distant views at all; nevertheless, as you go round some of the spurs of the slopes, you get a beautiful view of the famous "Rock" across the bay of Algeciras, just fitting into the V framework or aperture of the valley. Regarding the plants which might attract the notice of the English visitors during the period from the New Year to Easter, when they are likely to be there, the beauty prize must be given to *Rhododendron ponticum*, but they will not see much of this before the middle or end of April. Most people think of Rhododendrons, alpine excepted, as coming from China, Upper Burma, Tibet or the Himalaya, or perhaps at a stretch from Syria, as the name "ponticum" means presumably "from the Black Sea," and very few can imagine it as occurring as near London as South Spain; nevertheless, hard as it is to swallow or believe, there it is, the only place in Western Europe where it occurs. And it is a beautiful sight, the more so as it is so unexpected, it makes you think there must be "visions about"; it forms solid masses of flowers dotted about the sides of the ravine with *Quercus Suber* and *Q. lusitanica* in fresh green leaf. It has a long flowering period owing to the difference between the north and south sides of the valley. Another conspicuous plant is *Cistus crispus*, with its beautiful big flower 2 inches in diameter, and its dark-green crinkled leaves, with their grooved and hairy surface. It does not appear in flower before the middle or end of April, neither does *C. populiifolius*, which has a pink bud with thick, hairy sepals and a huge white flower 3 inches in diameter. The leaf is in a V, with wavy edges and a rough surface.

As regards the plants which flower earlier and are conspicuous in January, first must be mentioned *Erica australis*, with its profuse flowers of a beautiful deep red, with black projecting stamens. It is used for quite a long period as a table decoration in hotel dining-rooms and sitting-rooms, as also are *E. carnea* and *E. mediterranea*. The valley walk is indeed rich in Ericas, as there are also *E. arborea* and *E. scoparia*, both well known to winter visitors to the French Riviera, making a total of five or six, if you count separately the white or albino form of *E. carnea*.

Another conspicuous plant is *Scilla peruviana*, one of the many instances of a misleadingly named plant. It is quite unknown in Peru, its habitat being South Europe. Incidentally, *Erica australis* does not mean "from Australia" as might be thought by some, but only "southern," i.e. South Europe.

To return to our flowers, it must be admitted that *Scilla peruviana* has an alias, *Scilla hemisphaerica*, which meets it better, as the flower head forms a half-ball 6 inches in diameter, an umbel of innumerable flowers each  $\frac{1}{2}$  an inch across, of a beautiful dark indigo-blue with white stamens. The plant stands about 9 to 12 inches high, and has a huge bulb about the size of a coco-nut. It occurs in damp, marshy ground—a bog plant—and can often be seen along the sides of the main roads. In similar places the visitor will notice *Narcissus papyraceus* in January, when it forms sweet-scented pools of white. The flower has the merit amongst its species of being white throughout, for which reason it is also called *N. niveus*. Incidentally *papyraceus*, meaning “paper white,” also refers to this. Other plants of possible interest are *Cytisus linifolius* (*Genista linifolius*). When not in flower this shrub looks at a distance rather like *Rosmarinus officinalis*, as its leaves are linear, with a white under-surface. The stem also is white. The flowers are yellow, in a small compact head, 1 inch in diameter at the top of the stem. *Helianthemum lasianthum* (*Halimium lasianthum*) is shrubby and has a beautiful large flower of a clear yellow,  $1\frac{1}{2}$  inch in diameter. *Sedum brevifolium* forms small mats of red with its tiny leaves of fleshy cylinders of a beautiful soft red. It flowers in summer. Two ferns will also catch the eye: *Asplenium Adiantum-nigrum*, with its black and very brittle stems (it occurs in England) and *Gymnogramma leptophylla* (*Grammitis leptophylla*). At a distance the latter looks rather like a Cystopteris—the fronds are horizontal and in steps; it is one of the very few annual ferns. *Mandragora autumnalis* (*M. officinarum*) is a plant which is common on cultivated land. The flower is single, of a purple blue, somewhat like *Anemone Pulsatilla* or *A. vernalis* (but of the order Solanaceae). The leaves are in a rosette, flat on the ground, about 9 inches in diameter. This plant has earned its place in this text, not for æsthetic reasons (like the others), but because it is the plant mentioned in Genesis xxx, and several times by Shakespeare, and has been the source of many amazing and incredible superstitions and supposed virtues, and consequently of a good deal of writing. *Genista tridentata* (*Pterospartum tridentata*) has a yellow flower, and is of interest because it has no leaves, but instead a stem with a thin, flat membrane on either side (somewhat like *Acacia armata*). It is very thorny. *Genista lasiantha* is similar. *Allium roseum* deserves mention because of the beautiful shade of the pale pink of its cup-shaped flowers, forming an umbel 3 inches in diameter. It is a flower which should not be picked, for obvious reasons. *Lithospermum fruticosum* is striking, with its flowers of a beautiful deep blue (one might almost say “heavenly blue” as it is much more like the blue of the heaven here than the blue of the English heaven). Here it is more shrubby and upstanding (up to 3 feet high) than the *L. prostratum* of rock gardens in England, that unfortunate plant which is far too much talked about and which everyone trots out when they want to use a long name! There are two *Romuleas* (or *Trichonemas*), *R. Columnae*, with a small flower, which is common (it occurs in



England) and of which variety *grandiscapa* is common at Teneriffe. The other *Romulea* is *R. Clusiana*, which has a trumpet-shaped flower 2 inches in diameter of a very beautiful bright purple-blue, with a bright orange-yellow throat. It has established itself in rather a curious place—a big, detached lump of rock and earth on the seashore, isolated on a pebbly beach; it has spread over the top of this, forming a magnificent patch of colour. *Convolvulus tricolor* has a very effective colour scheme in white, dark blue and pale yellow in three rings, the throat being yellow. *Centaurea pullata* (*Melanoloma pullata*) has a large flower  $1\frac{1}{2}$  inch in diameter of pale pink. *Asteriscus maritimus* (*Buphthalmum maritimum*) has a large single flower 2 inches in diameter with yellow rays and yellow disc which forms at the junction of several stems (like a miniature bird's nest). The plant is low on the ground, and grows near the sea. *Anemone palmata* has a large, yellow flower  $1\frac{1}{2}$  inch in diameter with many sepals and a circular lobed and toothed leaf. *Iris Sisyrinchium* is a small Iris only 3 inches high, mauve in colour. *Clematis cirrhosa* is an evergreen with a large bell-shaped flower 2 inches in diameter, of a pale cream colour. *Anthemis fuscata* has a white flower  $1\frac{1}{2}$  inch in diameter, with dark brown bracts and a beautiful divided leaf. It may be described as a weed, but it is certainly a welcome sight in the winter landscape. *Glaucium flavum* (*G. luteum*) forms round, flat cushions. And last, but by no means least, *Brachytropis microphylla* (*Polygala microphylla*). This is one of the few plants selected by WILLKOMM and LANGE in their monumental *Illustrationes florae Hispaniae* as worthy of the honour of a coloured illustration. The flower is of a beautiful dark indigo-blue in a disc head  $1\frac{1}{2}$  inch in diameter at the top of a bare leafless stem about 2 feet high. It is a striking plant and at once catches the eye, although it grows in dense scrub.

As regards winter-flowering garden plants at Algeciras much (indeed a great deal) might be written. Suffice it to say that gardens are a blaze of colour from January to April continuously, a welcome change from gardens in England at that time.

Other conspicuous plants are *Phlomis Herba-Venti*, which flowers in April, has flowers of a soft pale pink in whorls at several stages, and very attractive leaves of thick soft felt, pale green with a white under-surface. *P. Lychnitis* has pale yellow flowers, also in April. It is a handsome plant 5 feet high, unbranched. They are both very common along the sides of streams.

*Allium triquetrum* makes welcome patches of clear bright white in April. The flower is trumpet shaped with pointed petals  $\frac{1}{2}$  inch in diameter, white with a green vein in a 2-inch drooping umbel. The stem is triangular, as indicated by the name. It is not a plant to be handled, in spite of the fact that in Algeria it is cultivated as a vegetable.

*Serapias Lingua*, with its curious insect-like flowers, of a red-brown colour, appears in April. This plant is familiar to those who frequent the French Riviera, where there are seven species of it.

THE RELATION OF GROWTH-SUBSTANCES, OR HORMONES,  
TO HORTICULTURAL PRACTICE: A REVIEW.

By M. A. H. TINCKER, M.A., D.Sc., WISLEY.

A HORMONE is a chemical messenger which though produced in only small quantities by the tissues yet exercises a profound influence on the activity of either the organism as a whole, or upon that of some particular organ. In animals where differentiation into glands and organs is highly developed, physiologists have for many years known much of these reactions; in plants where there is comparatively less differentiation of the tissues the study of such reactions is of more recent date.\*

Generally the animal hormones, so far tested, have very little effect on flowering plants (HAVAS and CALDWELL, TINCKER), although claims have been made by SCHOELLER and GOEBEL that they accelerate growth.

The investigations on which knowledge of plant hormones is based form a fascinating story of modern research. Here we may only outline this work, for as horticulturists our major interest lies in its application, yet without some survey no true appreciation of the present situation is possible. Reviews have already been published by WENT and KHOLODNYI.

*Brief Historical Review.*—It is well known that stems generally grow and bend towards light. Darwin in 1882 established that the stimulus of the light was perceived by a region of the shoot, near the tip, and that the response was evoked farther down the stem, resulting in unequal growth causing curvature. Particularly with grasses was this readily apparent. There was, therefore, a zone of transmission of the stimulus, and to the enquiring mind questions naturally arose concerning the route and means of transmission, and the nature of the substance, if any, or "message" transmitted.

ROTHERT and FITTING proved that the stimulus could pass downwards in the plant even when the veins or usual conducting channels were severed. By testing various conditions of the atmosphere BOYSEN-JENSEN concluded that after cutting into a stem to save the veins, a water-saturated gap was essential; for unless this was maintained the passage of the stimulus was interrupted and no response occurred. This indicated the probability that a water solution was the means of conveyance; and further evidence was obtained by cutting the stem and inserting a thin sheet of mica, and so preventing transmission.

\* Vitamins (occasionally confused with hormones) are taken into the animal organism with food, and though present in small quantities they too play an important rôle, especially in nutrition; we have come to look upon plants as the purveyors for animals of these accessory food substances.

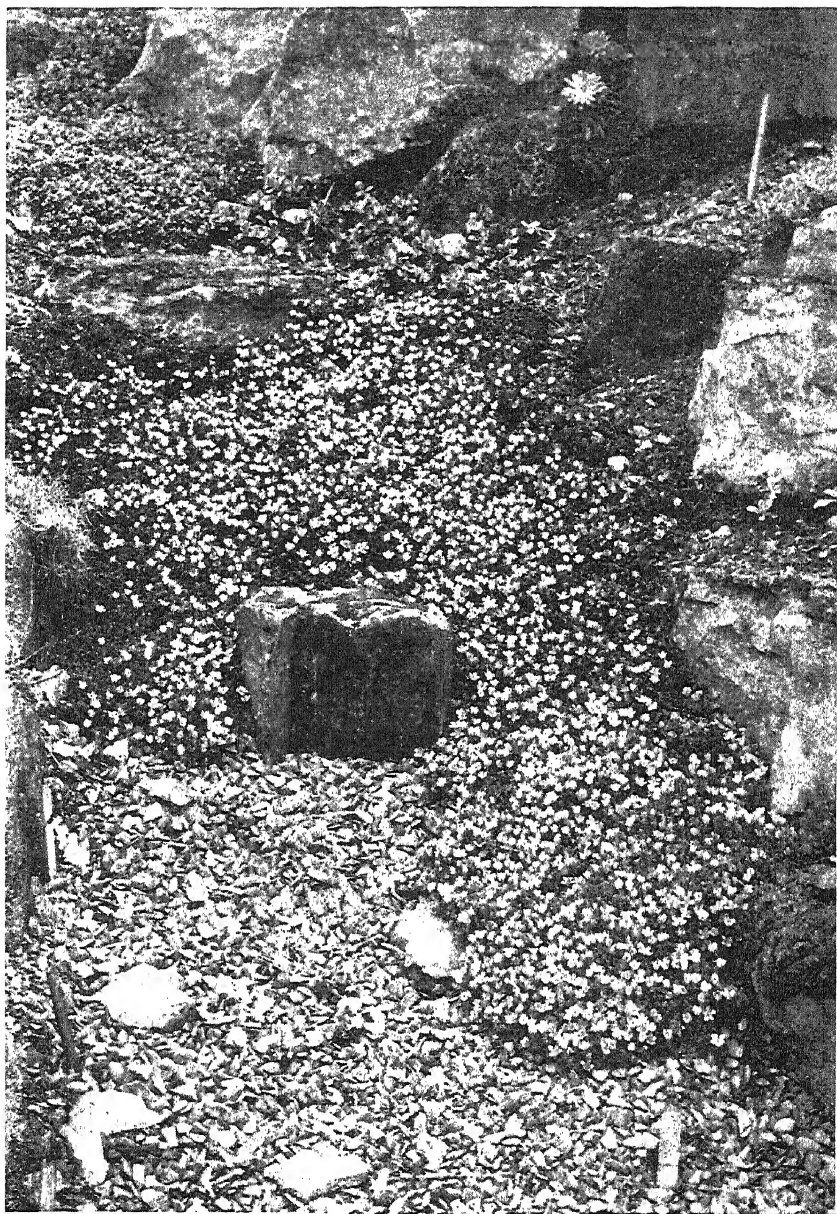


FIG. 98.—*SAXIFRAGA OPPOSITIFOLIA* AT WISLEY, APRIL 1936.

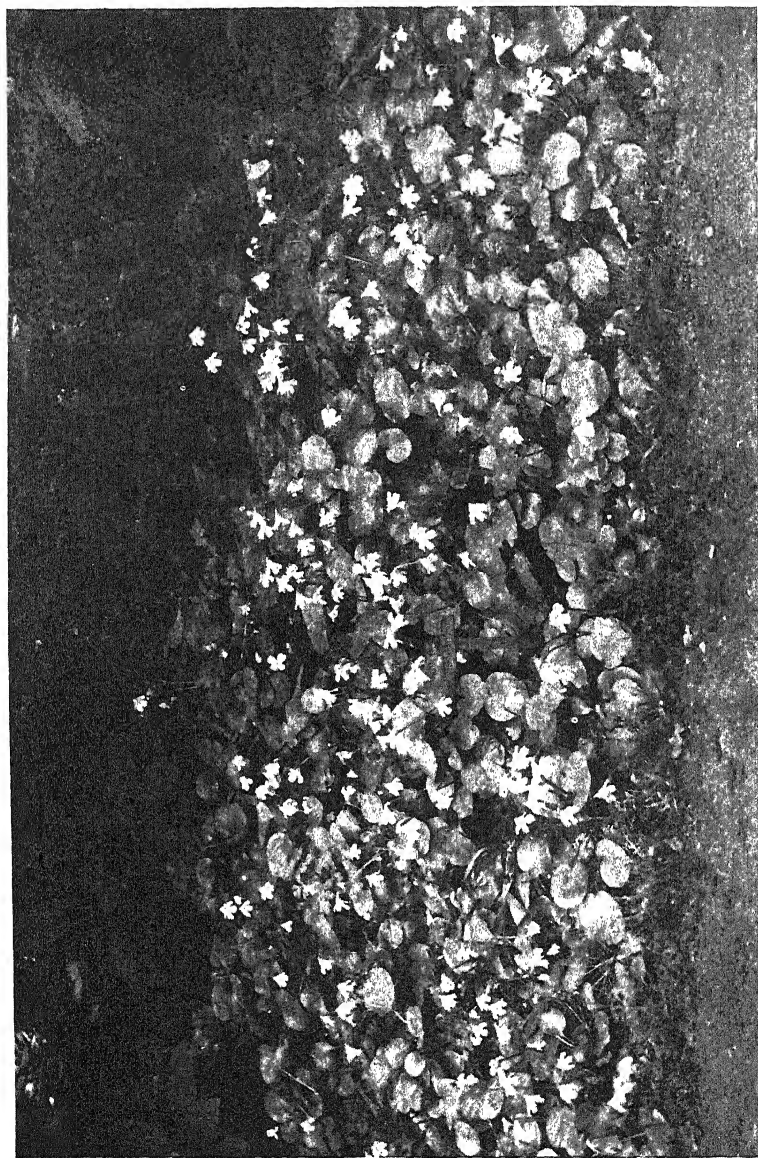


FIG. 99.—*SHORTIA GALACIFOLIA* AT WISLEY, APRIL 1936.

For experimental purposes the young shoots of seedling cereals and other grasses, called coleoptiles, proved highly suitable. By cutting off the tip of the coleoptile and placing a thin disc of gelatine between the replaced tip and stump it was found that the "message" passed through the gelatine (BOYSEN-JENSEN, PAAL, SNOW, and SODING). The tips of an Oat seedling previously stimulated by unilateral illumination were severed; and when placed upon cut Barley stumps produced curvature as the result of unequal growth on different sides. This indicated that the same mechanism might operate in the two species (STARK). Further evidence, to which some objection, however, was expressed, was collected by BRAUNER, who exposed decapitated stumps to unilateral light, and on replacing severed tips on them, obtained curvatures, whilst on others without replaced tips no curvature occurred; this was interpreted as indicative of the downward direction of the flow of any growth-promoting substances causing the curvatures.

To the Utrecht school of plant physiologists led by the late Professor F. A. F. C. WENT and his son we are indebted for the major part of the work leading to the accurate estimation of these effects; and finally, in collaboration with biochemists, to the isolation and recognition of the active compounds. A large number of Oat shoots grown under controlled conditions of light provided the experimental material; after severance, the tips were placed on jelly (agar or gelatine or even silicic acid) in varying numbers for different periods of time. The resulting reaction when these blocks of jelly were subsequently placed on decapitated stumps varied quantitatively with the time of emission and the number of emitting pieces; in this way the "message" or hormone was in effect isolated from the tissues and reintroduced. Accurate estimations were made of the reaction, and by measurement of the diffusion rate, or rate of transference, an approximate estimate of the molecular complexity of the chemical was made. So WENT found that a substance was present in the young Oat shoot which could accelerate growth in length.

The idea that there are such growth regulators in plants was not entirely novel, for the dominance of an apical bud over the lateral buds has been supposed by many horticulturists to be due to an inhibitor formed by the apical bud as it developed.

Many readers will be familiar with the work of LOEB, who investigated the influence of the organism as a whole on one part, in relation to regeneration of the part; his work with *Bryophyllum calycinum* particularly interested horticulturists. SNOW in a series of investigations studied the inter-relationship between different parts of the plant, and came to the conclusion that some inhibitor passed from the apex of the stem backwards and so regulated growth; he was able to show the influence of the shoot upon root development in seedlings.

WENT, continuing his work on plant hormones, showed that a root-forming substance was produced by leaves; for when defoliated, cuttings of *Acalypha* lost their ability to form roots; this could be

restored to them by minute traces of a leaf extract. The active principle was termed rhizocaline, the root-forming hormone. In 1934 THIMANN and WENT reported on the chemical nature of this hormone. They enlarged the scope of their enquiry by testing other plant materials for the compound, and included such diverse materials as Rice polishings, Wheat-germ oils, pollen of many species, including Maples, Juniper, Oak and Redwoods, and the leaves of Sunflower, Cherry, Laurel, and Mallow. Other workers (for example LAIBACH) demonstrated the presence of the hormones in various other plant tissues, including Orchid pollen.

But to KOGL, HAAGEN SMIT, and ERXLEBEN the credit for the chemical isolation of the hormone and its subsequent investigations is due. They obtained a crystalline compound and investigated its chemical nature. The growth-promoting substance proved to be an organic acid. The name auxin was given to the plant hormones regulating growth.

From other sources similarly active compounds were obtained. NEILSON obtained from *Rhizopus suinus* a growth-regulating hormone which he termed Rhizopin. For long it has been known that organic manures, such as stable manure, caused accelerated growth increments even greater than that produced by addition of equivalent chemical fertilizers; and from urine, HAAGEN SMIT and his workers isolated a growth-promoting substance which they termed hetero-auxin. The chemical nature of this compound was soon explored.

*The Production of the Hormone by Plants and Animals.*—WENT and BOUILLENNE have considered the formation of the root-forming substance. They found it to be present in cotyledons and as would be expected in limited quantities; evidently the substance is stored in the seed. It has also been detected in buds. Their work with both Acalypha and Bryophyllum indicated that photosynthetic activity was necessary for the production of the root-forming hormone by the leaves. Other evidence that the leaf makes the hormone can be drawn from the fact that in the vast majority of plants better rooting has been observed by gardeners from leafy than from defoliated cuttings. A specific instance may be quoted—HELMAN noted that Lemon cuttings when defoliated rooted less readily than when bearing leaves. All the evidence indicates a downward translocation of the substance after its production. WENT and BOUILLENNE further state that old or even dying leaves can give out large quantities of the root-forming substance. This suggests, for horticultural practice, that cuttings should be taken when bearing mature leaves.

These investigators also showed that the substance is of widespread occurrence in Nature and is not specific, for plants of Tea, Croton and Papaw formed mutually reacting hormones. Since their report, the chemical nature of the hormone has been discovered and its identity with indolylacetic acid established. The indolyl compounds, and especially indolylpropionic, the next in the series to the hormone, bear a very close chemical relationship to the amino-acid-like compound tryptophan, which has for long been known to be associated

with the breaking down of plant proteins. It is in fact a chemical stage between protein and indole. WENT's evidence that the hormone is given out freely from dying leaves suggests the possibility that it is chiefly formed in the plant as a result of the breaking-down process of proteins or other compounds. The other possibility is that the hormone is formed as an upgrade product of photosynthetic activity by the leaf; small quantities of this compound then evidently evade further elaboration or union with nitrogenous compounds. As in other cases, there is probably an equilibrium maintained between the hydrolysis or breaking-down processes and the synthesis, in which the concentration of the hormone is kept at a very low level. But as yet our knowledge of the formation of these compounds is scanty.

Of the occurrence of  $\beta$ -indolylacetic acid in urine PLIMMER states that it is frequently found, and particularly in cases of intestinal disorder. It has been observed that higher quantities are to be found after meals rich in fat, the fatty acid presumably being a waste product from the fat. Both indolylacetic and indolylpropionic acid are found amongst the decomposition products of proteins, so that their occurrence in many organic fertilizers in small quantities is not surprising.

*Tests of Preparations.*—Besides the curvature test made with the Oat coleoptiles, other tests have been devised for estimating the potency of preparations believed to contain hormones. WENT devised a Pea test method for auxin. Briefly this consists of measuring the curvature of split portions of the stems of Peas immersed in the solutions for a standard interval of time. The Pea test proved applicable over a wide range of concentrations.

For testing preparations of the root-forming hormone THIMANN and WENT devised a method which essentially consisted of measuring the roots formed on a Pea stem which had been placed inverted in a preparation believed to contain the hormone. The technique concerned was somewhat elaborate, but accurate, including controlled light conditions, careful washing and sterilization and preparation of the test materials.

LAIBACH and FISCHNICH employed decapitated Bean seedlings (*Vicia faba*) as their test material. Placing a covering of a lanolin paste containing the supposed hormone on the cut surface, they observed the subsequent rate of callus formation and noticed also an accelerated thickening of the stem with active compounds.

Other ready means of testing preparations in lanolin have been found. Seedling Tomato plants readily respond. HITCHCOCK applied his preparations to Tomato petioles and obtained bending and also subsequent twisting. These lanolin preparations applied to the stems of young Tomatos evoke noticeable responses in less than twenty-four hours. HITCHCOCK also used the Tobacco plant as a testing material for preparations of growth substances and found it useful.

*Chemical Considerations.*—KOGEL, HAAGEN SMIT and ERXLIEBEN identified the growth substance from urine, called hetero-auxin, as  $\beta$ -indolylacetic acid. THIMANN and KOEFLI established the identity of the growth-promoting and root-forming substances showing that



the root-forming hormone called rhizocaline and that from *Rhizopus* are the same. Further attention has therefore been directed to  $\beta$ -indolylacetic acid.

Soon after the identification of the active chemical a large number of other related substances was tested. Homologues, namely  $\beta$ -indolylpropionic and indole  $\beta$ -carboxylic acid at first did not seem to be so active. (THIMANN and KOEPLF, but see HITCHCOCK.)

HITCHCOCK later reported that indoleacetic, indolepropionic, phenylacrylic acid, phenylpropionic when dissolved in water, oil, or lanolin were active in causing root development, curvature and bending and swelling of stems and petioles.

ZIMMERMAN and WILCOXON report the activity of a further eight somewhat similar compounds, which they used as water solutions or mixed with lanolin; they included  $\gamma$ -naphthalene acetic acid, acenaphthyl-5-acetic acid, indolebutyric, phenylacetic acid and  $\gamma$ -naphthyl acetone.

When the almost infinite number of substitutions that may be made into the naphthalene and indole groups is imagined, the number of possible substituted fatty acids likely to prove active may be very great.

$\beta$ -indolylacetic acid is perhaps as highly active as any of the previously mentioned compounds yet tried.

I have recently been able to test the activity of iso-indolinone-3-acetic acid synthesized by Professor ROWE of the University of Leeds. This compound I have so far found to be inactive.

Quite recently ZIMMERMAN, HITCHCOCK and WILCOXON have reported that several esters act as growth-promoting substances. Their list includes methyl  $\beta$ -indoleacetate, methyl  $\gamma$ -naphthaleneacetate, ethyl  $\gamma$ -naphthaleneacetate, methyl phenylacetate, ethyl phenylacetate, *n*-butyl phenylacetate, iso-butyl phenylacetate, methyl  $\beta$ -indolepropionate, methyl  $\beta$ -indolebutyrate. These substances caused both accelerated growth and root formation. They were taken up by roots. One of these, methyl  $\beta$ -indoleacetate, proved more effective than hetero-auxin itself. It therefore appears that the limit of effectiveness may not be found in naturally occurring products and may yet remain to be discovered.

*Reactions exhibited by Plants.*—It was the curvature resulting from unequal rates of growth on different sides of a stem that first attracted investigators' attention. To-day repeated experiments with many different species have clearly demonstrated this response—petioles and stems bend and twist quite quickly as the result of unilateral application of hormones, readily applied in lanolin. On cutting sections of stimulated stems every sign of rapid cell division and cambial activity can be seen. LAIBACH and FISCHNICH illustrate their article with a section of a *Coleus* stem showing the effect of applying hetero-auxin upon cambial division on one side of a stem compared with the other untreated side.

Direct activation of the cambium by a gelatine preparation containing hetero-auxin carefully applied to a localized region of the stem



has been observed in young Sunflower hypocotyls (SNOW and LE FANU).

It is not surprising that the hormone, when applied to a soft stem such as a young Tomato or a Coleus, should readily enter through the epidermis. It has proved rather surprising to me, in my tests, that from lanolin preparations small but sufficient quantities of the hormone to prove effective can enter stems covered with a fairly thick epidermis or even a thin corky layer; entry through lenticels must, however, be considered. The thin bark of a young Willow shoot (*Salix vitellina*) permits entry to the hormone, as does the bark of a one-year-old Apple twig (varieties 'Melba,' 'Crawley Beauty' and 'Victory'). One could hardly expect the substances to penetrate the thick corky layer found on old wood. I have obtained no evidence that old woody stems can be so stimulated from lanolin pastes.

Entry must be very rapid on soft tissue, for the response occurs so quickly; thickening of the stem and curvature as the result of application of small quantities (0.2 gm.) of lanolin containing only  $\frac{1}{1000}$  part of  $\beta$ -indoleacetic acid has been observed at Wisley in 18 hours (sometimes earlier) after application to a young Tomato stem.

In dealing with the testing of preparations some mention of root formation has already been made, but it is this phenomenon that deserves the horticulturist's closest attention. Many workers have been able to cause roots to develop from stems and petioles by applying lanolin preparations containing the hormones. LAIBACH'S and FISCHNICH'S figures show roots developing from the stems of Coleus, and from stumps of decapitated Beans, and from the Tomato stem. ZIMMERMAN and WILCOXON show admirable photographs of root development from Tomato and Tobacco plants, and ZIMMERMAN and HITCHCOCK were also able to accelerate the formation of roots on a climbing vine-like species, *Cissus sicyoides*. All these responses were produced by entire plants.

Similarly, injection of the compounds in solution into the tissues has proved effective. It has more recently been established by HITCHCOCK and ZIMMERMAN that these growth substances can be effectively taken up by root action from the soil to which they were added by growing plants. They illustrate their report by photographs showing prolific root development on Tobacco stems twenty days after adding indolebutyric acid to the soil. They discuss, also, factors affecting the rate of transport within the plant of the substances taken up; for example, the rate may be controlled by conditions of moisture. The acquired growth substance exercised some control of flowering of Tobacco plants.

To propagate, severance from the parent plant is necessary. Shoots of Japanese Maple, Apple, and other plants were treated with lanolin preparations containing the hormones, and after 7 to 21 days they were cut and then placed in the rooting medium, with favourable subsequent results. HITCHCOCK and ZIMMERMAN thus successfully used the hormones in horticultural practice.

COOPER, before an application of a lanolin preparation containing

$\frac{1}{2000}$  parts of  $\beta$ -indolylacetic acid, scraped away the epidermis and cortical layers of 'Eureka' Lemon cuttings taken from mature wood of the current and previous year. He states: "The hormone not only caused increased production of roots on cuttings with leaves, but also caused formation on cuttings without leaves, whilst on controls with no leaves no roots were formed." Internodal cuttings of *Tradescantia* without nodes or leaves formed roots in two weeks, on certain internodes nearer the apex; no roots formed on untreated internodes. COOPER has turned his attention to plants known to be difficult to propagate from cuttings.

HITCHCOCK and ZIMMERMAN in a more recent paper describe experiments with woody cuttings. They placed the cuttings in different solutions for varying periods before transferring them to the propagating house. The solutions used contained 4, 10, 20 and 40 mgs. for each 100 c.c.; the length of the periods of treatment varied from 6 hours to 4 days. A marked rooting response was obtained with Holly (*Ilex opaca*), Yew (*Taxus cuspidata*), Apple 'Grime's Golden,' and Japanese Maple. They consider that this method was more effective than the application in lanolin in the case of woody cuttings.

The results obtained at Wisley, both with the lanolin pastes and with the solutions, will be described in a further article in this JOURNAL.

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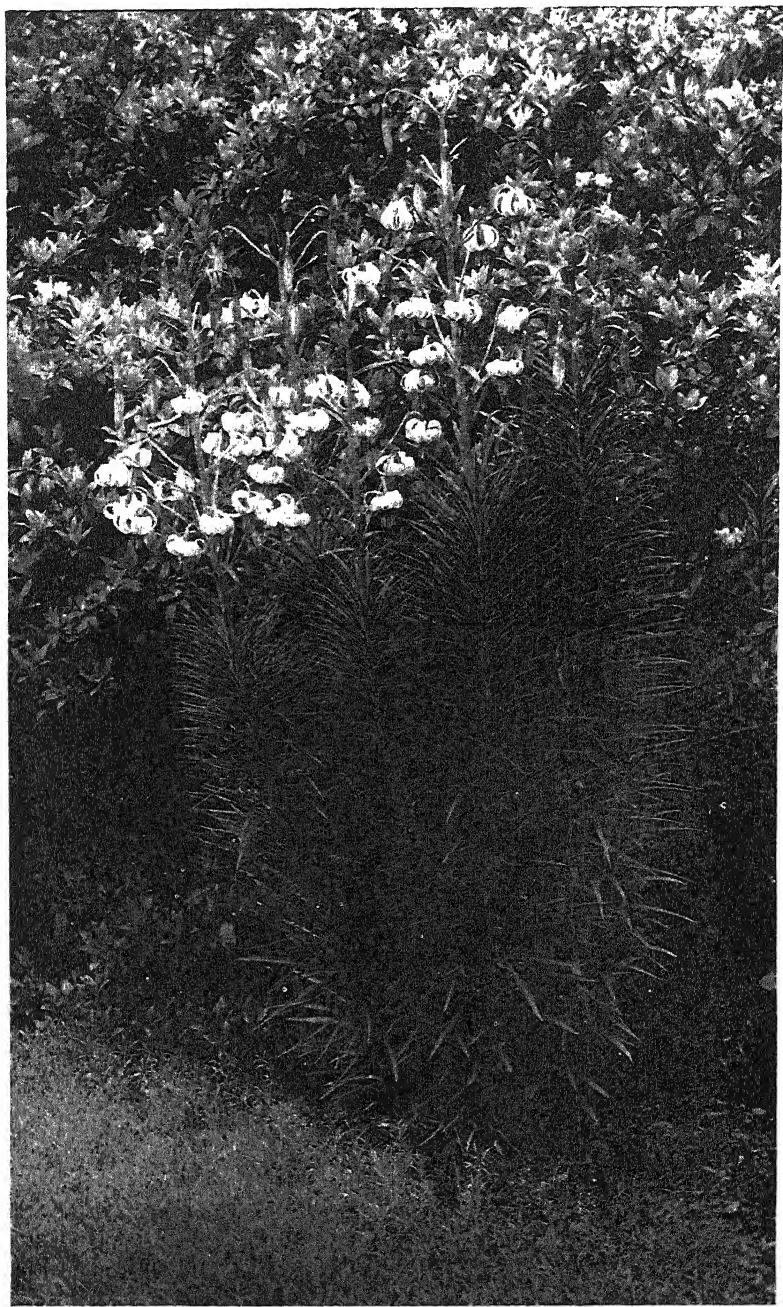


FIG. 100.—*LILIUM PYRENAICUM* AT WISLEY, JUNE 1936.

[To face p. 388.]

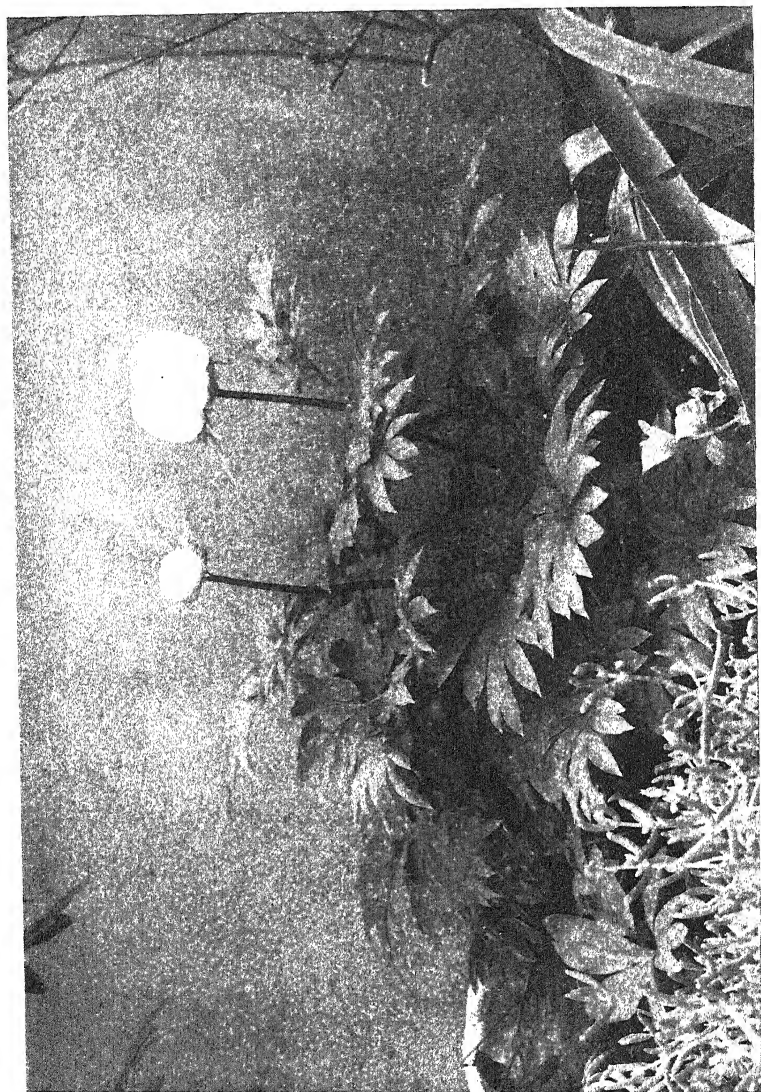


FIG. 101.—*PAEONIA CRETICA* IN TEMPERATE HOUSE, WISLEY, 1936.

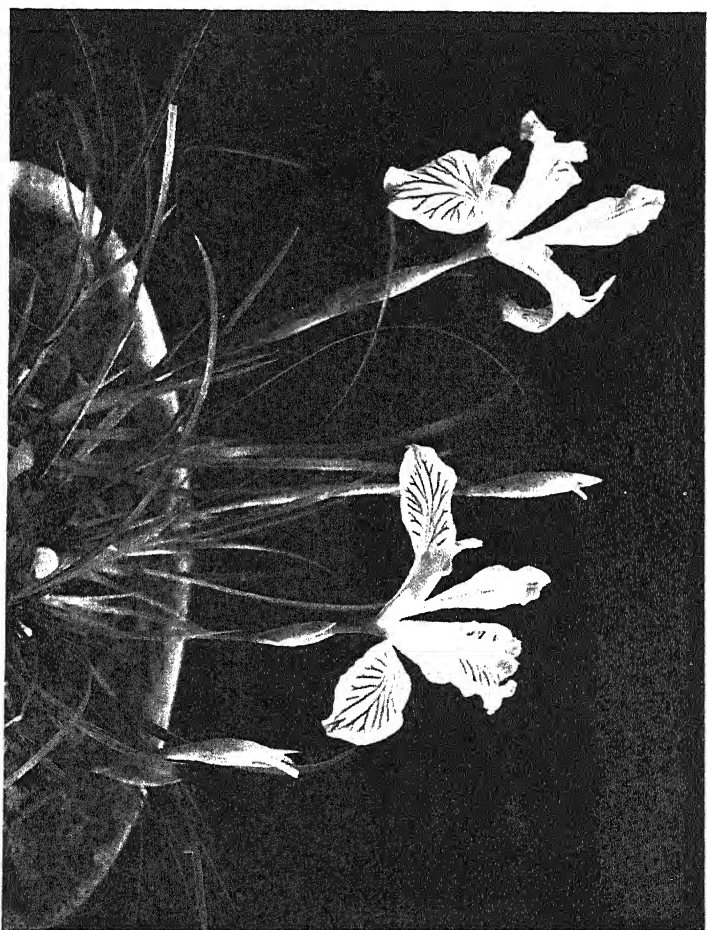


FIG. 102.—*IRIS INNOMINATA*.  
(p. 355)



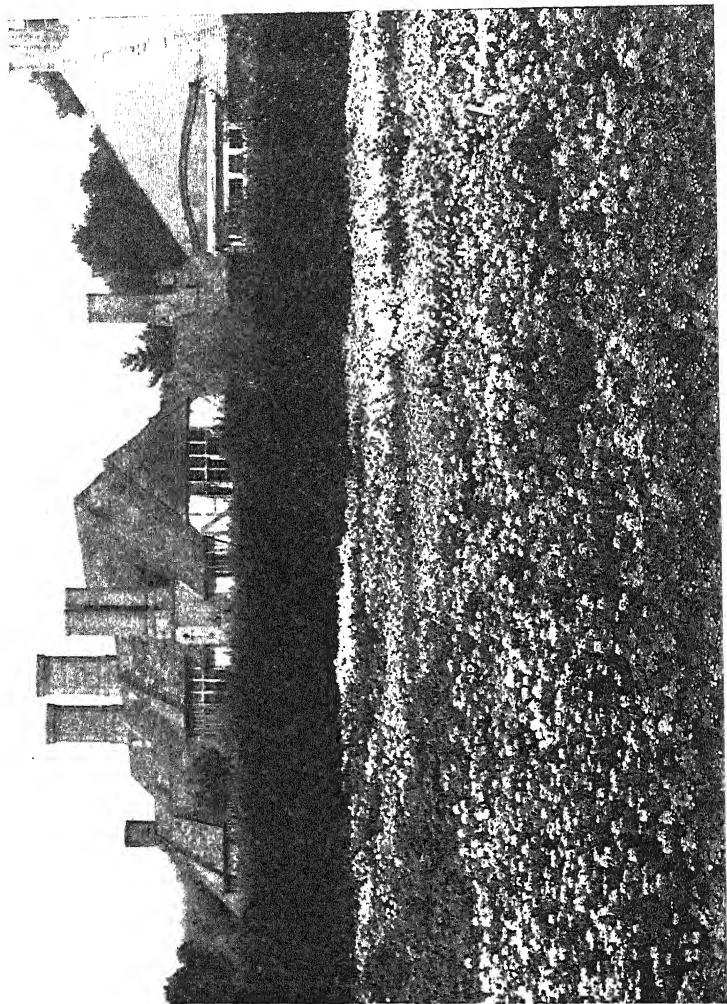


FIG. 103.—VERBENAS ON TRIAL AT WISLEY, 1935.

[To face p. 389.]



## PLANTS TO WHICH AWARDS HAVE BEEN MADE IN 1936.

**Aponogeton Kraussianum.** A.M. July 21, 1936. From Messrs. Perry, Enfield. A pretty South African 'Water Hawthorn,' thought to be less hardy than the common *Aponogeton distachyon*. The fragrant white flowers are borne in twin inflorescences 1 to 2 inches long. The floating leaves are narrowly oblong, 5 inches long.

**Campanula calaminthifolia.** A.M. July 7, 1936. From the Director, R.H.S. Gardens, Wisley. A prostrate species for the alpine house, forming a mat of trailing shoots clothed with small, orbicular, coarsely-toothed leaves. The erect, white, bell-shaped flowers,  $\frac{1}{2}$  inch across, are borne singly on short, axillary branchlets.

**Carnation (Border) 'Renée Nicholls.'** F.C.C. July 7, 1936. Shown by Messrs. Allwood, Haywards Heath, A.M. 1935. A picotee variety of good habit, suitable for show purposes or the open border; flowers of good form, creamy-yellow ground with very narrow deep maroon margins, slightly scented.

**Cattleya Loddigesii, Cannizaro var.** A.M. August 4, 1936. From E. Kenneth Wilson, Esq., Cannizaro, Wimbledon, S.E. 19. The erect spike bore a cluster of rose flowers which are somewhat larger than the typical form. Native of Brazil.

**Clematis chrysocoma.** A.M. July 7, 1936. From Mr. E. Markham, East Grinstead. A Chinese species suitable for planting against a warm wall, where it will grow to a height of 15 feet. The hirsute leaves have each three coarsely-toothed or lobed leaflets two inches long. The four-petalled flowers are three inches across, clear pink with yellow stamens, and are carried on eight-inch stalks in axillary clusters of five or six.

**Clematis 'Comtesse de Bouchaud.'** A.M. July 7, 1936. From Mr. E. Markham, East Grinstead. A beautiful variety of the *Jackmanii* section, with large, six-petalled flowers of bright rosy-mauve, six inches across.

**Deutzia Monbeigii.** A.M. July 7, 1936. From the Director, R.H.S. Gardens, Wisley. A very attractive small-flowered species forming a spreading bush six feet or more in height. A descriptive note, accompanied by an illustration, was published in the JOURNAL, 59, p. 409, October, 1934.

**Deutzia pulchra var. formosana.** A.M. July 7, 1936. From Lt.-Col. L. C. R. Messel, O.B.E., Handcross. A species of distinct appearance, due to the unusually narrow funnel-shape of its pendent, white flowers. These are arranged in narrow panicles five inches long on short, leafy branchlets. The lanceolate, sharply serrate leaves vary in length from an inch on the smaller twigs to five inches on strong non-flowering growths.

**Eucryphia Billiardieri.** A.M. July 21, 1936. From Lionel de Rothschild, Esq., Exbury. A very graceful evergreen shrub from Tasmania, where it is capable of forming a tree nearly 100 feet in height. In favoured localities in this country it becomes a large bush with small oblong leaves which are very glaucous beneath. The glistening white, axillary flowers are nearly 2 inches across.

**Eugenia apiculata.** A.M. July 21, 1936. From Viscountess St. Cyres, Lymington. Commonly known as *Myrtus Luma*, this Chilean evergreen shrub is not hardy everywhere, but in mild districts it forms an attractive, densely leafy bush. The small white flowers are very freely borne on short, lateral branchlets. Each has 4 concave petals and a central cluster of rose-flushed stamens.

**Grevillea alpina.** A.M. June 23, 1936. From Dorothy, Countess of Cranbrook, Snape Priory, Suffolk. A pretty Australian shrub, hardy on the Suffolk coast and in other favoured localities; elsewhere a useful plant for the unheated greenhouse. The small elliptical leaves are dark green above, paler beneath. The curved tubular flowers are brick red, merging to yellow in the upper half, in umbellate heads at the tips of the branchlets.

**Lilium  $\times$  Dalhansonii, Dereham variety.** A.M. July 7, 1936. From Hugh Wormald, Esq., East Dereham. The tall stout stems of this very handsome hybrid Lily bear several whorls of dark green leaves and terminal racemes of as many as 40 flowers on spreading, six-inch peduncles. The reflexed perianth-segments are deep maroon, paling to orange at the base, which is brown-spotted.

**Lilium Henryi var. citrinum.** A.M. July 21, 1936. From Messrs. Wallace, Tunbridge Wells. This very beautiful variety has large flowers with recurving, undulate segments. The colour is soft, pale yellow, each segment having a central green ray and a few chocolate-coloured marginal spots.

**Lilium 'Mary Swaythling.'** A.M. July 7, 1936. From the Rt. Hon. Lord Swaythling, Southampton. This outstanding Lily belongs to a race of hybrids of which the original parents were *L. Martagon* and *L. Hansonii*. It is a tall plant with medium-sized flowers of lustrous golden-yellow, lightly spotted with crimson near the base.

**Rhododendron 'Betty Stewart.'** A.M. May 23, 1936, after trial at Exbury as a hardy free-flowering *Rhododendron* with a compact habit and dark green oblong-lanceolate leaves 16 to 18 cm. long and 5 to 6 cm. wide. Inflorescence a compact truss with 12 to 14 flowers on green pedicels 2 to 2.5 cm. long. Corolla 7 to 8 cm. wide, cherry-red, upper lobe spotted and suffused white, lobes 3 to 3.5 cm. long, 2.5 to 3.5 cm. wide. Calyx lobes uneven, 0.5 mm. to 1 cm. long. Stamens uneven, 2 to 2.5 cm. long. Style 3.5 to 4 cm. long, curved and pubescent towards the base. From C. B. Van Nes. Flowering period, last week in May.

**Rhododendron (Azalea) 'Hamlet.'** A.M. May 23, 1936, after trial at Exbury. Inflorescence a compact truss with 12 to 14 flowers borne on hairy pedicels 2.5 cm. long. Corolla 10 to 11 cm. wide, orange tinged pink with darker blotch on upper corolla lobe. Stamens uneven, 4 to 5 cm.

long, pubescent towards the base. Style glabrous, 5 cm. long. Sent for trial by Koster & Sons. Flowering period, last week in May.

**Rhododendron (Azalea) 'Marmion.'** A.M. May 23, 1936, after trial at Exbury. Inflorescence a compact truss with 10 to 12 large light yellow flowers with orange spots on upper corolla lobe. Corolla lobes 3.5 to 4 cm. long and 3 to 3.5 cm. wide. Stamens uneven, 4 to 5 cm. long, pubescent at the base. Style 5 to 5.5 cm. long. Sent in for trial by Koster & Sons. Flowering period, second and third week in May at Exbury.

**Rhododendron 'Mrs. P. D. Williams.'** A.M. June 6, 1936, after trial at Exbury as a free-flowering hardy Rhododendron, semi-compact in habit. Leaves oblanceolate, 12 to 14 cm. long, 4 to 4.5 cm. broad, dark green above with pale green underside. Petiole 3 to 3.5 cm. long, slightly grooved. Inflorescence a compact truss with 15 to 17 flowers borne on pedicels 3 to 3.5 cm. long. Calyx lobes 5 to 6 mm. long and 5 mm. broad. Corolla very open, almost flat, ivory-white, with large brown blotch on upper lobes. Lobes 3 cm. long and 3 to 3.5 cm. broad. Stamens 10, unequal, 2 to 3.5 cm. long, filaments pubescent towards base. Pistil 3.5 cm. long, style glabrous. Sent to Exbury for trial by Knap Hill Nursery Ltd. Flowering period, first and second week in June.

**Rhododendron 'Norman Gill.'** A.M. May 30, 1936, after trial at Exbury as suitable for growing in a warm garden. Leaves leathery, oblong-lanceolate, 10 to 14 cm. long, 5 to 6 cm. broad: upper surface dark green, glabrous, midrib a lighter colour, slightly grooved, primary veins 15 to 17 on each side. Under surface a light green, midrib prominent: petiole 4 to 5 cm. long, upper side slightly grooved and reddish in colour. Inflorescence a compact truss with 9 to 11 flowers. Pedicels 4 to 5 cm. long. Calyx unequal, red, 4 to 5 mm. long. Corolla saucer-shaped, white flushed pink, with dark blotch, lobes 5 to 6 cm. long and 6 to 7 cm. wide, rounded. Stamens 12, unequal, 4 to 6 cm. long. Pistil 5 to 5.5 cm. long, curved with large stigma. Sent to Exbury for trial by Messrs. Gill & Son, Falmouth.

**Rhododendron 'Zuyder Zee.'** A.M. May 16, 1936, after trial at Exbury as a hardy free-flowering plant, with a compact habit and dark green leaves 10 to 12 cm. long and 5 to 6 cm. wide. ('Mrs. Lindsay Smith'  $\times$  *campylocarpum*.) Leaves rounded at the apex, mucronate, midrib and veins slightly grooved. Under surface of the leaf reddish-brown with 12 to 14 prominent veins on each side of midrib. Petiole 2 to 2.5 cm. long, grooved on the upper side. Inflorescence a compact truss with 14 to 16 flowers on green glandular pedicels 1½ to 2 cm. long. Calyx small, with 5 uneven lobes 3 to 3.5 mm. long and reddish margins. Corolla creamy-yellow, openly campanulate, 8 to 9 cm. across, 2 to 2.5 cm. long and 3 cm. wide, with reddish spots fading green with age on the three upper lobes. Stamens 10, uneven, pubescent at the base, 2 to 3 cm. long. Style curved, 3.3 to 4 cm. long, slightly hairy at the base. Raised by Messrs. Koster & Sons. Flowering period, second and third week in May at Exbury.

**Rhododendron 'Mrs. Philip Martineau.'** F.C.C. May 30, 1936, after trial at Exbury. This variety received A.M. on June 7, 1933, also after trial. See JOURNAL R.H.S. 60, p. 129.

**Rosa omeiensis var. praecox.** A.M. July 7, 1936. From Major F. C. Stern, Goring-by-Sea. *Rosa omeiensis* is a hardy and vigorous Western Chinese species of light and graceful appearance due to its small and neat pinnate leaves. The present early-flowering variety is sparingly thorny and remarkably free from bristles. The white flowers are soon followed by pendent, flask-shaped, glossy fruits of brightest scarlet.

**Rose 'Princess Marina.'** A.M. July 7, 1936. From Mr. H. Robinson, Hinckley. An intense salmon, Hybrid Tea variety, shading to apricot. The flowers are of excellent shape and are said to force well.

**Russelia juncea.** A.M. July 7, 1936. From Lionel de Rothschild, Esq., Exbury. A remarkable Mexican plant which forms a copiously-branched, pendent, green bush almost destitute of leaves. Almost every slender branchlet bears a succession of bright scarlet, tubular flowers an inch long.

**Sambucus racemosa.** A.M. July 21, 1936. From Lionel de Rothschild, Esq., Exbury. A pretty, red-berried Elder native of continental Europe, Siberia and China, which has long been cultivated in England. It has finely-toothed, pinnate leaves of medium size, and bears innumerable small berries of sealing-wax red in dense, pendulous bunches 3 inches long.

**Scabiosa caucasica 'Evelyn Braithwaite.'** A.M. July 7, 1936. From Mr. W. Braithwaite, Leeming Bar. An excellent variety for cutting, having large sulphury-white flowers,  $3\frac{1}{2}$  inches across, borne on long, stiff stems. The variety arose as the result of a cross between *Scabiosa* 'Floral Beauty' and an unnamed hybrid raised by the exhibitor.

## THE AWARD OF GARDEN MERIT.—XXXVI.\*

By F. J. CHITTENDEN, F.L.S., V.M.H.

It is perhaps desirable once more, since there are no doubt some Fellows who do not know the precise meaning and purpose of the Award of Garden Merit, to refer to the grounds for its bestowal. Details of the various Awards, Medals and Cups are given in the Society's Programme for the year in our January number. We may enlarge somewhat upon the note given there on the Award of Garden Merit.

The Award of Garden Merit is given by the Council on the recommendation of the Wisley Garden Committee. The recommendation is made in favour of plants which in the experience of the members of that Committee and of the Garden Staff are of especial value for British gardens, provided they are obtainable with comparatively little trouble at a reasonable price, and provided also that they can be grown by anyone who is prepared to supply their very moderate requirements.

Some of the plants to which it has been given are naturally such as require a soil free from lime, or much water, or a sunny place or a shady one, and so on; and few gardens, at any rate on a chalky soil, can perhaps grow all those plants that have received the Award, but plants worth while for all types of soils and for all aspects are to be found among them. Horticultural varieties of what are often called florist's flowers are not as a rule given the Award of Garden Merit, but rock plants, bulbs, herbaceous plants for the border, the wild garden and the woodland garden, shrubs for all situations and ornamental trees are all to be found.

It would not be difficult to select from the list, for any garden in Great Britain, plants for flowering outdoors at all times of the year.

The notes which have been published in this JOURNAL under the title "The Award of Garden Merit" are intended to give details of the characters and cultivation of the plants which have received the Award. The first of the notes appeared in our JOURNAL, Vol. 47, 1922, and over two hundred have now appeared. The first hundred were collected and published as a separate pamphlet which is still available.

The vast number of plants which have received Awards of one grade or another during the many years since 1859 when the Floral Committee was established (a record of which will be found in the JOURNAL INDEX volume soon to appear) cannot all be grown in any garden

\* The notes on the first hundred plants to receive the Award of Garden Merit have been collected from our JOURNAL, vols. 47 to 53, and published as a pamphlet, price 1s. For subsequent notes see vol. 54, pp. 218 and 423; 55, pp. 121 and 276; 56, pp. 80 and 245; 57, pp. 65 and 354; 58, pp. 171 and 400; 59, pp. 131, 308, 360, 406 and 449; 60, pp. 89 and 545; and 61, pp. 94, 138, 225, 265, 298 and 358.

however large, and the establishment of the Award of Garden Merit gave an opportunity of selecting plants of outstanding merit in their several classes which are indispensable for any garden large enough to contain them.

209. *HIBISCUS SYRIACUS*.

*Award of Garden Merit, April 18, 1934.*

Autumn-flowering shrubs are not very numerous, and when they are striking and have other good qualities they are, consequently, all the more valuable. *Hibiscus syriacus* is one of them, and when the season suits it, it is very striking and pleasing indeed.

It was introduced to Great Britain long ago, whence is unknown, and is perfectly hardy here but it requires a hot summer to cause it to flower freely, and so needs a wall in the cooler counties. In the south, especially in a warm soil and in a fairly dry climate, it usually flowers in August and September, and in a hot summer it flowers very freely indeed.

No doubt the fact that it had been long cultivated in gardens in the Near East led LINNÆUS to give it its specific name, but it is a native of India and China and is an introduced plant in Syria. The likeness of its flowers to those of the Hollyhock induced some gardeners to call it *Althaea* and being woody to add the specific name *frutex*, and it still appears in some catalogues under the name *Althaea frutex*.

It is a bushy shrub of somewhat upright habit, six or eight feet high. The almost glabrous leaves which on falling leave the stipules still in place are more or less ovate and three-lobed and from three to four inches long. The flowers vary much in colour, are produced singly on short peduncles in the axils of the upper leaves of the shoots, and are about three inches across, sometimes considerably more.

A large number of varieties have been named, some with white, some with blue or red or purple or variegated flowers, sometimes double, but the most to be desired single. A considerable collection is planted in Howard's Field on the Lilac Walk at Wisley, where their effect can be gauged. There is nothing in habit to distinguish one variety from another, and taste must determine what colours are chosen.

In the warmer parts of the continent the lateral shoots are pruned back every winter, so that only the stout framework of the bushes is left; but in England such hard pruning does not answer, and what pruning is necessary to keep the bushes in bounds or to shape them to one's desires is best done at the same time as the Buddleias in April.

*Hibiscus syriacus* is figured in the Botanical Magazine, t. 83.

210. *PRUNUS SERRULATA ERECTA*.

*Award of Garden Merit, May 10, 1931.*

The Japanese Cherries are usually of spreading habit, but one variety differs markedly from the rest in being perfectly erect, forming

a narrow column, said to reach a height of 25 feet, but trees in this country are rarely more than half that height at present. Such fastigate trees are often very valuable in the garden, giving that contrast of growth-form which aids so much in forming a garden picture, and many genera produce such variations. Where a dark evergreen background can be used this Cherry is particularly valuable. It flowers freely towards the end of the Cherry season.

The Japanese name is Amanogowa, the Milky Way, an appropriate enough name for the long column of almost white flowers. These flowers are in clusters of two to four, single or semi-double, about  $1\frac{3}{4}$  inch across, and sweetly scented. The variety has been called the Apple-blossom Cherry and this also is an appropriate name, for the ovate deep pink buds open to a white flower more or less tinged with pink especially towards the margins of the petals.

The foliage, dark green at maturity and singly or doubly toothed, opens with a bronzy tinge, adding to the beauty provided by the flowers.

## 211. PLATYCODON GRANDIFLORUM MARIESII.

*Award of Garden Merit, September 18, 1933.*

CHARLES MARIES obtained this plant in Japan when collecting for Messrs. VEITCH, and the varietal name was given in honour of that collector of fine plants. The type *Platycodon grandiflorum* was introduced in 1782 and is figured in the Botanical Magazine, t. 252, and several varieties have been found or raised in gardens, including a semi-double one. The best variety is *P. grandiflorum Mariesii*, which grows to about 2 feet in height, is sturdy enough to require no stake, and has larger purplish-blue or white flowers than the type. A good figure of this variety is given in The Garden, vol. 27 (1885), p. 217.

*Platycodon* differs from *Campanula* mainly in the fruit, though the flowers (balloon-like in the bud) open more widely than in most *Campanulas*, as the generic name suggests. In this variety they measure about 3 inches across, and may number up to 20 on a well-grown stem. The foliage is ovate and clothes the stem up to the inflorescence, the flowers being in the axils of foliose bracts.

The plant requires a good, deep and well-drained loam. It will not tolerate bad drainage, and some reputation for tenderness has been gained because of this intolerance, nor will it grow well in shade. It is not an easy plant to transplant or to divide, for the thick fleshy roots are easily damaged, so it is best planted straight out of pots into which the seedlings have been pricked. Seed is freely produced and easily raised in a sandy compost.

*P. grandiflorum* is a native of Eastern China, and it flowers in July and August.

## GARDEN NOTES.

*The 'Cornish Gilliflower' Apple.*—In the report of the Conference on Apples and Pears held by the Royal Horticultural Society in September 1934, Mr. J. WILSON, in his remarks on "The Winter Pruning of Apples and Pears" ("Apples and Pears," p. 11), mentions the 'Irish Peach' and the 'Cornish Gilliflower' as two varieties of Apples that "do not form fruit spurs by pruning" and that "bear their fruits on the tips of their laterals, refusing to form artificial fruit buds."

This is not my experience with the 'Cornish Gilliflower.' I have trees about twenty years old every branch of which is crowded with fruit spurs. I find that fruit spurs form readily if the laterals of the current year are removed to a quarter of an inch when they are semi-ripe, *i.e.* when they get hard and have turned slightly reddish or brownish at the base, the leading shoots being shortened only once a year, early in May.

A correspondent in Dorset informs me that the 'Irish Peach' also readily forms fruit spurs under this treatment. I hope others will give this method a trial and report their results.

Contrary to what is too often asserted, the 'Cornish Gilliflower' is an early Apple. It is in season at the same time as 'James Grieve' and 'Worcester Pearmain'; its season is a short one. It is a very handsome Apple, of a good size and with a pleasant aromatic flavour.

My trees crop well, so much so in fact that I would venture to suggest to growers desirous of removing the scandal of the 'Worcester Pearmain' that they might do worse than turn their attention to the 'Cornish Gilliflower.'—R. R. H. Moore, Painswick Lodge, Cheltenham.

[Experiments made at Wisley some years ago showed that the fruiting of 'Irish Peach' could be increased and the form of bush trees improved by pruning back shoots which flowered and failed to fruit as soon as this failure was evident. As growers of this variety know, ordinary spur pruning in winter cannot be carried out with success in this variety.—*Ed.*]

*Dendrobium tetragonum* (fig. 104).—*Dendrobium* is a widely distributed genus, containing many dissimilar species and sections. The flora of New South Wales includes thirteen species, and among them the subject of this note, distinct by reason of its four-sided pseudo-bulbs, curious flowers and pendent habit.

Pencil-like basally, the pseudo-bulbs then taper upward, and swell into a quadrangular portion, bearing a few smooth shining green leaves apically, among which, or just below, the short-stemmed racemes of flowers are borne. As in many other *Dendrobiums* the older pseudo-



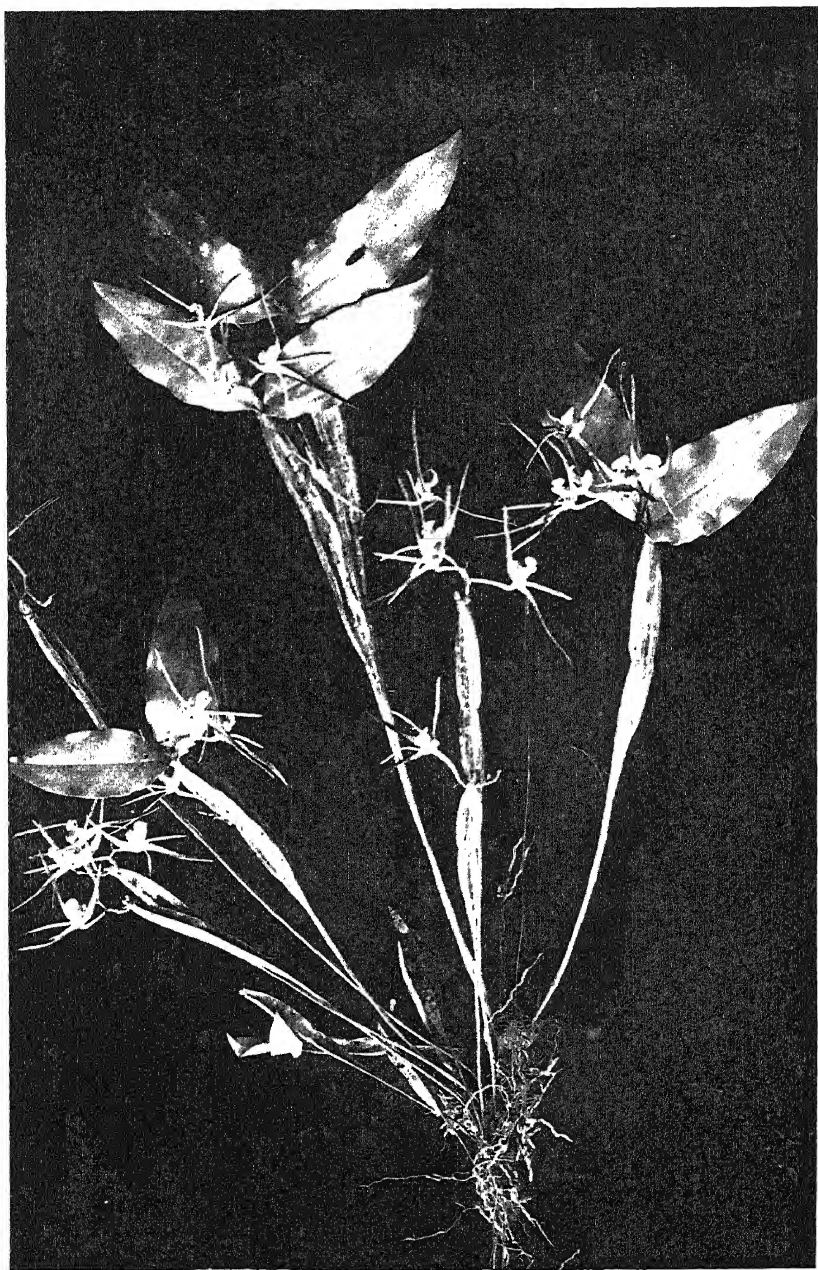


FIG. 104.—DENDROBIUM TETRAGONUM.

[To face p. 396.

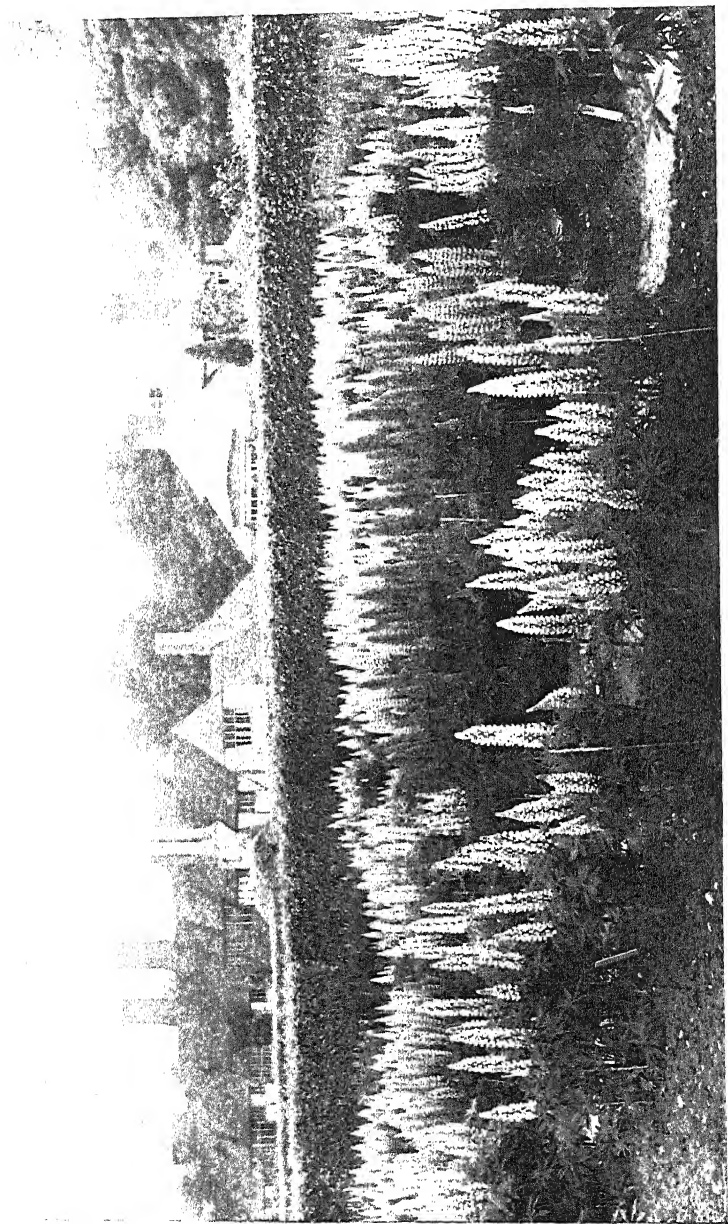


FIG. 105.—THE TRIAL OF PERENNIAL LUPINS AT WISLEY, 1936.



FIG. 106.—AZALEAS IN THE WILD GARDEN, WISLEY.



FIG. 107.—*PHYLLOSTACHYS NITIDA* IN MR. SCRASE-DICKENS' GARDEN.

[To face p. 397.

bulbs are also capable of producing flowers, these if not conspicuous are noteworthy for their fragrance, particularly sweet in some forms, and the attenuation of the greenish, yellow-brown marked sepals and petals. These vary in length from one to two inches, the sepals being the longer. The lip is much shorter and broader, greenish-yellow, often approaching white, and prettily barred and marked with purple.

The Queensland forms usually have longer flowers and longer bulbs than the New South Wales varieties. The latter I have seen growing wild in the Gosford gullies in partial shade and I was struck by the quaint tufted habit. The plant seems monotypic in habit: I know of none similar. From its habit and situation it would seem a mistake to give the plant too much light under cultivation when growing. In autumn and winter exposure to light should be an advantage. Where it is growing the morning temperature may fall to or near freezing point, but the days are sunny. In summer the temperature is subtropical with abundance of moisture in the air. From the position of the plants, water must pass away quickly and, like many epiphytes, they seem to prefer moisture to wet.

The flowering season is spring.—*E. Cooper.*

*Bamboos flowering.*—A year or two ago the fine bamboo *Phyllostachys nigra* flowered in many gardens and as usual, after flowering, generally died completely or left only a miserable remnant of its former glory. A letter from Mr. ARTHUR JONES, in whose garden at Avonside, Fordingbridge, this happened, now tells us that *P. aurea* is about to flower there, and it would be interesting to know whether this species is doing the same in other gardens, or not.

Another beautiful bamboo, *P. nitida*, it is feared may flower soon as well. The magnificent plant into which this fine species can grow is well shown in fig. 107. The photograph from which this illustration was made was taken this season in Mr. CHARLES SCRASE-DICKENS' garden at Coolhurst, Horsham, where so many fine garden plants revel, but alas this plant shows signs of flowering this year.

## VERBENAS TRIED AT WISLEY, 1935.

AMONG the plants that were much grown in English gardens some years ago, and which have fallen somewhat into the background, is the garden Verbena. The incursion of *Antirrhinum* rust and the resulting damage done to *Antirrhinums*, which have in late years found such a great place in gardens, lead to a consideration of what other plants could take their place if the disease proved persistent and as destructive as it had shown itself to be in California, and among competitors for that place the garden Verbena seemed a possible successor. Not quite so hardy, not quite so easy to manage, and possibly with a somewhat smaller range of colours, but including some colours peculiarly its own, it yet appeared to be worthy of greater use than is at present being made of it, and accordingly a trial of the available varieties was made at Wisley in the summer of 1935. Seventy-six stocks of seed were received for trial from various sources, and this seed was sown under glass on February 20, 1935, the seedlings, after pricking out, being planted in the open on May 31 in rows  $1\frac{1}{2}$  foot apart with 12 inches between the plants.

All the stocks made excellent growth and flowered freely. They were examined by the judges on several occasions and final recommendations were made for Awards on August 9, 1935.

The garden Verbena appears to derive from several sources: *Verbena chamaedryfolia*, often grown on the rock garden, but unfortunately not thoroughly hardy, brings in the bright red shades; *V. teucrioides* with fragrant flowers, the white varieties and the general fragrance that characterizes these plants; *V. incisa* and *V. phlogiflora*, the purple and rosy colours that are frequent in them. Interbreeding has given a great range in colour and some in habit. All these species are natives of S. America.

The notes show what a wide range of colour is available in these plants, which for some reason or other are not so widely used in England as they used to be.

## HABIT COMPACT (p. 399).

*Flowers White.*

SNOWBALL (Bodger).—15 inches. Flowers  $\frac{5}{8}$  inch, dull white.

*Flowers Pink.*

**Cameo Pink** (raised and sent by Messrs. Bodger Seeds, El Monte, California, U.S.A.). A.M. August 9, 1935.—6 inches. Compact; prostrate habit; flowers  $\frac{7}{10}$  inch diameter, soft blush-pink.

FAIRY QUEEN (Bodger).—A mixed stock.

CHAMOIS (Bodger).—16 inches. Flowers  $\frac{3}{4}$  inch, do not open completely, soft salmon-buff. A true even stock.

*Flowers Carmine.*

CARMINE BALL (Waller-Franklin, Watkins & Simpson, Bodger).—9 inches. Flowers  $\frac{1}{2}$  inch, deep carmine. Stocks variable in shade.

*Flowers Red.*

FIREBALL (Watkins & Simpson, Kelway).—10 inches. Flowers  $\frac{3}{4}$  inch, bright rosy-red. Good even stocks. Also sent by Messrs. Waller-Franklin, Bodger, Macdonald, and by Messrs. Ryder, as 'Elfin Scarlet,' but these stocks contained colour rogues and varied in shade.

*Flowers of Crimson shades.*

DANNEBROG (Daehnfeldt, Watkins & Simpson, Bodger).—12 inches. Less compact habit than other varieties; flowers  $\frac{1}{2}$  inch, rosy-crimson, eye creamy-white. Stocks variable in shade and habit.

CROWN PRINCE (Bodger).—10 inches. Flowers  $\frac{3}{8}$  inch across, deep chestnut-crimson, small creamy-white eye. A good even stock.

*Flowers Violet.*

VIOLET BOUQUET (raised and sent by Messrs. Waller-Franklin Seed Co., Guadalupe, California, U.S.A.). H.C. August 9, 1935.—12 inches. Flowers  $\frac{3}{4}$  inch diameter, bright reddish-violet, creamy-white eye.

*Flowers of Mixed Colours.*

ROYAL BOUQUET (Watkins & Simpson, Waller-Franklin, Bodger).—18 inches. Flowers  $\frac{1}{2}$  inch diameter. Also sent by Messrs. W. H. Simpson as 'Giant Erect Mixed.'

HABIT SPREADING (p. 398).

*Flowers White.*

GRANDIFLORA WHITE (Bodger).—1 $\frac{1}{2}$  feet. Flowers  $\frac{3}{4}$  inch diameter. Contained colour rogues. Also sent by Messrs. Harrison of Maidstone as 'Snow Queen,' this also was mixed.

GRANDIFLORA WHITE (Waller-Franklin).—1 $\frac{1}{4}$  feet. Flowers  $\frac{1}{2}$  inch diameter. Contained colour rogues. Distinct from Messrs. Bodger's variety.

PURE WHITE (Macdonald).—9 to 12 inches. Flowers  $\frac{1}{2}$  inch diameter, dull white. True.

*Flowers Sulphur-Yellow.*

LUTEA IMPROVED (Waller-Franklin).—1 $\frac{1}{4}$  feet. Flowers  $\frac{3}{8}$  inch diameter. Also sent by Messrs. Bodger, Kelway, and Pfitzer as 'Golden Queen.'

*Flowers of Pink Shades.*

SALMON DEFIANCE (W. H. Simpson).—16 inches. Flowers  $\frac{3}{4}$  inch diameter, pale rose-pink, eye creamy-white. Contained colour rogues.

SALMON PINK (Bodger).—1 foot. Flowers  $\frac{3}{8}$  inch diameter, pale rose-pink. Contained colour rogues.

LUMINOSA (Waller-Franklin, Bodger, Macdonald).—1 foot. Flowers  $\frac{5}{8}$  inch diameter, rose-pink, creamy-white eye.

**Giant Salmon Pink** (raised and sent by Messrs. Waller-Franklin Seed Co., Guadalupe, California, U.S.A.). A.M. July 22, 1935.—14 inches. Flowers  $\frac{5}{8}$  inch diameter, rich rosy-salmon, small creamy-white eye. A good even stock.

ELLEN WILLMOTT (Bodger).—1 foot. Flowers  $\frac{5}{8}$  inch diameter, rich rosy-salmon-pink, small creamy-white eye. Germination bad; a true stock.

BEAUTY OF OXFORD (Waller-Franklin).—1 foot. Flowers  $\frac{3}{4}$  inch diameter, rich rosy-salmon. Variable in shade.

ROSEA STELLATA (Bodger, Waller-Franklin).—Variable stocks.



MAJESTIC ROSE SHADES (Watkins & Simpson).—16 inches. Flowers  $\frac{5}{8}$  inch diameter, rose and rose-pink shades.

PINK AND ROSE SHADES (Waller-Franklin).—A darker flowered selection of the last.

*Flowers Rosy-Carmine and Cerise.*

CARMINE ROSE (Bodger).—A mixed stock.

CERISE QUEEN (Waller-Franklin, Watkins & Simpson).—1 foot. Flowers  $\frac{3}{4}$  inch diameter, rich rosy-cerise, eye small, creamy-white. Stocks contained colour rogues.

*Flowers Rosy-Red.*

ROSE CARDINAL (Bodger, Waller-Franklin).—16 inches. Flowers  $\frac{5}{8}$  inch diameter, rich rosy-red, eye large, creamy-white.

*Flowers Scarlet.*

**Etna** (raised and sent by Messrs. Waller-Franklin Seed Co., Guadalupe, California, U.S.A.). A.M. August 9, 1935.—12 inches. Flowers  $\frac{3}{4}$  inch diameter, rich scarlet, small creamy-white eye. Also sent by Messrs. Watkins & Simpson, Macdonald, Kelway, but these were inferior stocks.

CARDINAL (Bodger).—16 inches. Flowers  $\frac{5}{8}$  inch diameter, rich scarlet, eye small, creamy-white. A variable stock.

SCARLET DEFIANCE (W. H. Simpson).—18 inches. Flowers  $\frac{5}{8}$  inch diameter, scarlet, eye large, creamy-white. True stock.

DEFIANCE RE-SELECTED (Watkins & Simpson).—12 inches. Flowers  $\frac{1}{2}$  inch diameter, rich scarlet, eye small, creamy-white. Also sent by Messrs. Waller-Franklin as 'Defiance.'

COCCINEA (Waller-Franklin).—16 inches. Flowers  $\frac{5}{8}$  inch diameter, dull scarlet, eye small, creamy-white.

COCCINEA (Bodger).—Dwarfer, 12 inches, and with larger,  $\frac{3}{4}$  inch, and bright scarlet flowers than Messrs. Waller-Franklin's stock of this variety.

LUCIFER (Waller-Franklin, Bodger).—12 inches. Flowers  $\frac{5}{8}$  inch diameter, deep rich scarlet.

**Spectrum Red** (raised and sent by Messrs. Waller-Franklin Seed Co., Guadalupe, California, U.S.A.). A.M. August 9, 1935.—12 inches. Flowers  $\frac{3}{4}$  inch diameter, brilliant scarlet. Also sent by Messrs. Watkins & Simpson, a less regular stock.

*Flowers Crimson.*

NEW RED (Hurst).—14 inches. Flowers  $\frac{5}{8}$  inch diameter, dull crimson, eye small, creamy-white.

CRIMSON SEEDLING (Bodger).—12 inches. Flowers  $\frac{3}{4}$  inch diameter, deep ruby-crimson self.

*Flowers Lavender.*

LAVENDER GLORY (Waller-Franklin, Kelway).—15 inches. Flowers  $\frac{7}{8}$  inch diameter, soft lavender. Contained white and pink rogues.

*Flowers of Violet Shades.*

BLUE SHADES (Waller-Franklin).—16 inches. Flowers  $\frac{1}{2}$  inch diameter, violet-blue self. Variable in shade. Also sent by Messrs. Bodger as 'Dark Blue,' this varied in shade.

BLUE, WHITE EYE (Bodger, Macdonald).—18 inches. Flowers  $\frac{1}{2}$  inch diameter, violet-blue, eye large, creamy-white. Stocks very variable in shade.

BLUE DEFIANCE (W. H. Simpson).—14 inches. Flowers  $\frac{3}{4}$  inch diameter, rich violet-blue, eye large, creamy white. Variable in shade. Also sent by Messrs. Waller-Franklin as 'Grandiflora Blue.'

VIOLACEA STELLATA (Bodger).—A mixed stock.

**Royale** (raised by Messrs. Waller-Franklin Seed Co., and sent by Messrs. Watkins & Simpson, Drury Lane, London). H.C. August 9, 1935.—12 inches. Flowers  $\frac{3}{4}$  inch diameter, deep violet-purple, large



creamy-white eye. A good even stock. Also sent by Messrs. Waller-Franklin, Bodger, Harrison of Maidstone, Kelway—these were variable stocks.

*Flowers of Mixed Colours.*

PFITZER'S GIANT (Pfitzer), MAMMOTH MIXED (Carter), ELITE (Ohlsens Enke).—16 inches. Flowers  $\frac{3}{8}$  inch diameter.

SPECIES.

**V. venosa** (sent by Messrs. Bodger Seeds, El Monte, California, U.S.A.). **A.M.** August 9, 1935.—11 inches. Of erect, spreading habit; flowers  $\frac{1}{2}$  inch diameter, deep rosy-lilac.

**V. VENOSA LILACINA** (Benary, Bodger).—Characters of *V. Venosa*, but flowers very pale lavender-lilac.

**V. ERINOIDES 'WHITE'** (Bodger).—9 inches. Of spreading and prostrate habit. Flowers  $\frac{3}{8}$  inch diameter, white. Early flowering.

**V. ERINOIDES 'PURPLE'** (Bodger).—Like last, but flowers light purple.

**V. aubletia** (sent by Messrs. W. H. Simpson, Birmingham). **H.C.** July 22, 1935.—18 inches. Erect, spreading habit; flowers  $\frac{1}{2}$  inch diameter, light rosy-magenta.

## BOOK REVIEWS.

"Trees of Britain : Their Form and Character." By Barbara Briggs. 8vo. 430 pp. (Lutterworth Press, London, 1936.) Price 21s.

The first sentence of the Foreword declares that "this is a simple book for ordinary people." It is more than that. Written in simple everyday language it represents and reveals much careful research and a discriminating selection of facts which will interest and instruct ordinary people who wish for a more exact knowledge of the trees most frequently met with in the British countryside.

The ninety-nine pencil studies of leaves, flowers, fruits and twigs, accurately and artistically drawn and beautifully reproduced, with soft grey backgrounds, have given us very pleasing and helpful illustrations. Few of the line drawings of specimen trees give such clear representations of the characteristics as could be desired for easy recognition. Those of the Holm Oak and Yew are the most successful.

The description and illustrations of the Hornbeam are particularly good, and should prove serviceable in helping "ordinary people" to recognize this tree, which puzzles them more frequently than any other of our commoner trees.

"Trees, a Dictionary of British Wayside." By A. W. Holbrook. 8vo. 236 pp. (Country Life, London, 1936.) Price 7s. 6d.

This book, small enough to carry in a pocket, describes in plain untechnical language thirty-two deciduous and fifteen coniferous trees, as well as twenty-two shrubs or small trees.

Forty-six excellent plates from well-chosen photographs, most of which were taken in winter, are particularly useful in that they show so plainly the characteristic branching habits and outlines of each subject.

The author's clever outline illustrations of leaves, flowers, fruits and winter twigs and buds should enable any reader to recognize a specimen even in mid-winter. There is a good glossary for the few unavoidable botanical terms used in the text, and although the plants dealt with are arranged alphabetically the addition of an index makes reference luxuriously easy.

It is a pity that the London Plane, *Platanus acerifolia*, has not been sandwiched in between its two reputed parents in an otherwise wonderfully complete and handy book of reference.

"The Mushroom Handbook." By L. C. C. Krieger. 8vo. xiii + pp. 11-538. (Macmillan, New York, 1936.) 15s.

The title of this book is misleading to English readers, for it has nothing to do with Mushroom growing. It deals with the larger fungi of all groups, describing such as occur in the United States with figures in black and white of many of them, and thirty-two well reproduced in colour. A very useful book for the field naturalist in the States is the result.

## NOTES AND ABSTRACTS.

**Cotoneaster lactea** W. W. Sm. By C. V. B. Marquand (*Bot. Mag.*, t. 9454; July 1936).—A shrub from Yunnan, with large broadly elliptic leaves and slender branches bearing densely tomentose corymbs, up to  $2\frac{3}{4}$  inches diameter, of small white or pale cream flowers: the ovoid-pyriform fruit is about  $\frac{1}{4}$  inch long. A hardy plant.—*M. S.*

**Eria amica** Reichenbach. By V. S. Summerhayes (*Bot. Mag.*, t. 9453; July 1936).—From north-east India, northern Burma, northern Siam, Yunnan, and Formosa, having erect cylindrical pseudobulbs up to  $7\frac{1}{2}$  inches long by  $\frac{1}{2}$  inch diameter from the apex of which arise 2 to 4 linear-lanceolate leaves and one to three inflorescences, these being racemes of 6 to 12 variously coloured flowers. An epiphytic herb, about 10 inches high, for a warm Orchid house: requires careful treatment.—*M. S.*

**Gaultheria codonantha** Airy Shaw. By H. K. Airy Shaw (*Bot. Mag.*, t. 9456; July 1936).—A shrub from Upper Assam, about 7 feet high, with slightly zigzag, terete, hispid branches, broadly ovate to lanceolate, hispid, strongly nerved leaves 2 to 7 inches long, and short axillary racemes of green flowers up to  $\frac{3}{4}$  inch diameter. Fruit deep purple-black, depressed globose, about  $\frac{1}{2}$  inch long. An easily grown plant for a cool greenhouse.—*M. S.*

**Lavatera assurgentiflora** Kellogg. By T. A. Sprague (*Bot. Mag.*, t. 9450; July 1936).—A native of the islands of Santa Barbara and Los Angeles, California, which is cultivated in Mexico, Chile, and the Mediterranean region, is apparently hardy in Sussex. A deciduous shrub about  $5\frac{1}{2}$  feet high with palmately 5- to 7-lobed coarsely serrate leaves and deep cerise flowers about 2 inches in diameter in fascicles of 2 to 4.—*M. S.*

**Leucocoryne ixiolides** (Hook.) Lindley. By J. B. Sealy (*Bot. Mag.*, t. 9457; July 1936).—A bulbous herb from Chile, with narrowly linear leaves and long scapes up to 16 inches tall carrying umbels of 2 to 10 pale lilac to light purple white-eyed flowers about  $1\frac{1}{2}$  inch in diameter. A greenhouse plant.—*M. S.*

**Pelargonium Andrewsii** (Sweet) G. Don. By H. G. Schweickerdt (*Bot. Mag.*, t. 9455; July 1936).—A tuberous perennial from the Cape Province with stipulate leaves of various forms arising from the apex of the tuber, the outer usually entire, the inner pinnately or bipinnately lacinate; stipules up to 5 inches long, narrowly lanceolate to oblanceolate; scapes about 7 inches long, branched, bearing umbels of pink flowers streaked with crimson, the linear spatulate petals about 1 inch long. A plant for the warm greenhouse.—*M. S.*

**Pentstemon ambiguus** Torrey. By N. Y. Sandwith (*Bot. Mag.*, t. 9448; July 1936).—A distinct species of Phlox-like habit, 2 to  $2\frac{1}{2}$  feet tall, with small, pinkish-purple, long and narrow-tubed flowers with spreading corolla lobes; a hardy perennial.—*M. S.*

**Primula Wigramiana** W. W. Sm. By W. Wright Smith (*Bot. Mag.*, t. 9451; July 1936).—At present known only from the high mountains of Nepal, where it was first discovered in 1931. A perennial herb for the greenhouse, up to 10 inches high, with scapes bearing umbels of white widely funnel-shaped, short-tubed flowers about 1 inch in diameter, with a large calyx, and thick oblanceolate leaves in a basal rosette.—*M. S.*

**Rhododendron rhabdotum** Balf. & Cooper. By J. Hutchinson (*Bot. Mag.*, t. 9447; July 1936).—A native of Bhutan, discovered by Cooper in 1915 and introduced into this country by Kingdon Ward. A shrub up to 10 feet high with trusses of four white crimson-striped funnel-shaped flowers yellowish within; requires a sheltered position in all parts of England.—*M. S.*

*Sarcococca humilis* Stapf. By J. R. Sealy (*Bot. Mag.*, t. 9449; July 1936).—Native in western Hupeh, eastern Szechwan, and eastern Yunnan. A low hardy evergreen shrub, 18 inches high, tufted, with dark glossy leaves and black shiny berries which remain on the plant for two years; closely related to *S. Hookeriana*, of which it is sometimes regarded as a variety.—*M. S.*

*Sutera grandiflora* (Galpin) Hiern. By E. Milne-Redhead (*Bot. Mag.*, t. 9452; July 1936).—A woody herb native in the eastern Transvaal, up to  $3\frac{1}{2}$  feet tall, with leafy stems bearing terminal, somewhat corymbose racemes up to 1 foot long, of large light violet flowers about  $1\frac{1}{2}$  inch in diameter. A greenhouse plant which has not set seed at Kew, and is therefore propagated there by cuttings.—*M. S.*

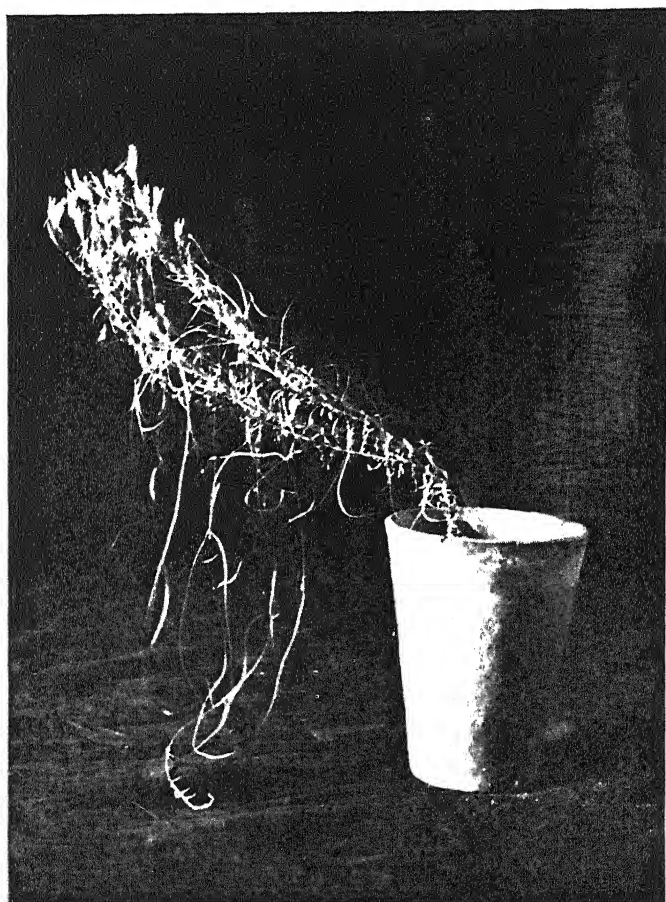


FIG. 108.—*NIEREMBERGIA HIPPOMANICA* ATTACKED BY *CUSCUTA* SP.  
(p. clx)

[To face p. 404.]

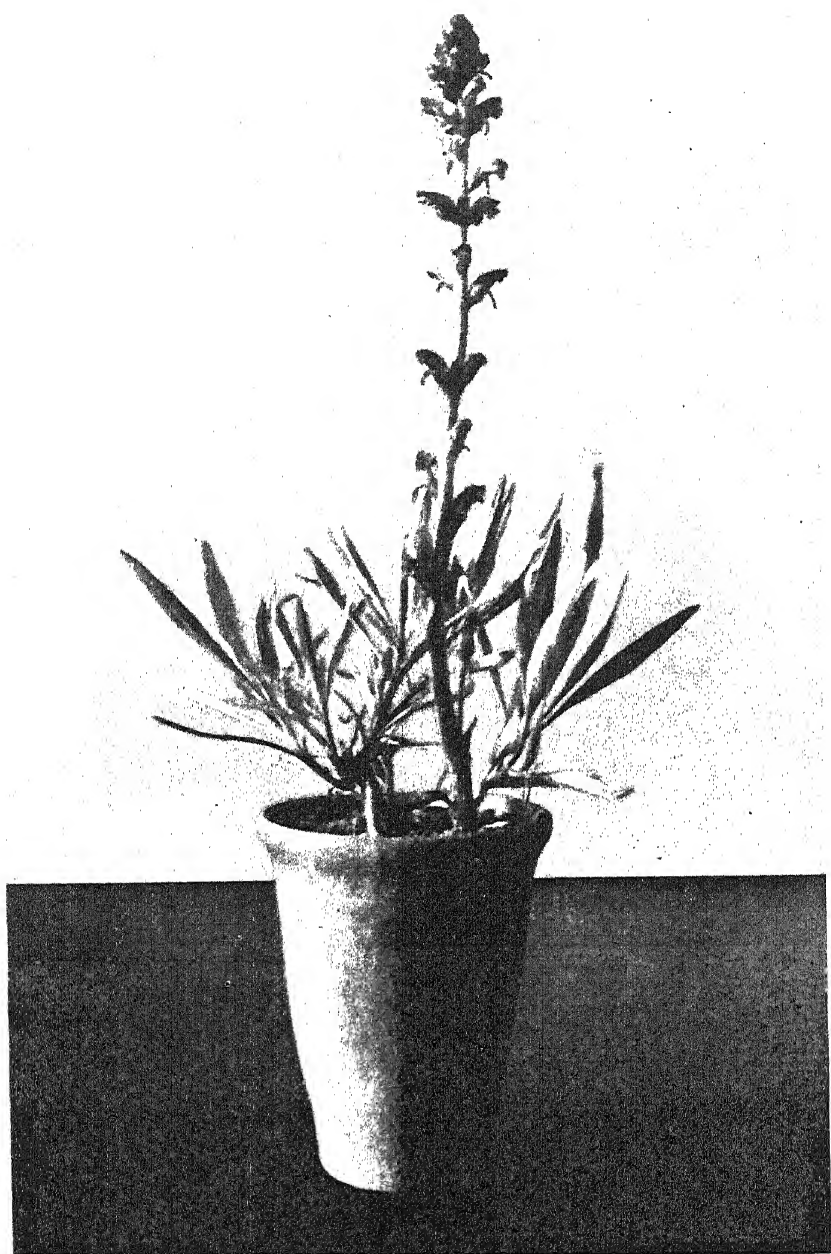


FIG. 109.—BROOMRAPE, *OROBANCHE COERULEA*, PARASITIC ON  
*OENOTHERA MACROCARPA*.  
(p. clx)

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Vol. LXI



Part 10

October 1936

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## PLANT-HUNTING IN THE CAUCASUS.

By W. E. TH. INGWERSEN, F.R.H.S.

[Read August 18, 1936; Mr. C. T. MUSGRAVE, V.M.H., in the Chair.]

IN June and July 1935 a party of friends and I decided to visit the tremendous range of the Caucasus in search of rare alpine plants of which great numbers remain awaiting introduction to our gardens.

The party consisted of my good friend Dr. P. L. GIUSEPPI, to whom the itinerary of the trip was left and we had ample reason to thank him for working out all the details of the trip most carefully with the representatives of Intourists, Ltd., the great travelling bureau of the Soviet Union; Dr. N. W. JENKIN, the notable grower of alpine plants, of Hindhead, Surrey, was my second companion and both were old and proved companions of similar tours in various parts of Europe, including the wild mountains of the Balkan Peninsula. The remaining two members were my young friends and pupils, PHILIP BALLARD and KENNETH LAZENBY, both of whom had proved their value as staunch companions in the hills in the previous year on an extended plant-hunt in the mountains of Bulgaria.

Knowing something about the difficulties of travelling in out-of-the-way mountains the party was fitted out with tents, sleeping bags and various preserved and concentrated foods to act as emergency rations in districts where the thinly populated country could not be relied upon to furnish sufficient food for our party. Dr. GIUSEPPI, aided by an Intourist interpreter, kept charge of our travelling arrangements throughout, Dr. JENKIN elected himself camp cook and PHIL BALLARD assumed the post of co-cook, furnishing us after hard days of climbing

and scrambling and collecting with most welcome, nourishing and comforting stews and soups which left such notable dishes as olla podrida far behind and contained, I am sure, even more and unlikely ingredients. KENNETH LAZENBY was general camp assistant and the whole party joined in the plant-collecting which was in general my special charge.

DOBIN, our interpreter, who had lived in England as a political refugee before the World War, proved himself possessed of a remarkable idiomatic knowledge of English and as a pleasant companion throughout our tour. He was full of information of his country both in the Czar's time and under the Soviet, and as no restrictions were placed on our movements we saw far more of present-day Russia than falls to the lot of average conducted parties visiting the vast country under Soviet rule.

We entered Russia at Niegoreloye, passing with our train under a huge iron triumphal arch adorned with Soviet symbols and the inscription "Workers of the world unite." Here we had to undergo a very thorough Customs examination in a huge hall adorned with wall frescoes depicting various phases of the agriculture and industry of Soviet Russia.

The examination was particularly strict for printed matter and gramophone records, and some of our maps seemed to worry the authorities as being more detailed than any maps of their country known to them. This examination being at last finished we were rushed into the broad-gauge train for Moscow and allotted very comfortable sleeping cars and food tickets for dinner and breakfast *en route*. In the dining car elaborate menus, printed in French and Russian, were handed to us, and each of us chose what his fancy directed, but all were finally, after a long wait, served with the identical dish of veal, and not much of that. After a comfortable night and a most indifferent breakfast we arrived at Moscow at about 11 A.M. and were met at the station by DOBIN and in a huge car were driven to the Savoy Hotel, clean, up to date and with an efficient kitchen. In Moscow we spent that and the next day sightseeing, calling on various officials and visiting the world's most miserable botanical garden, and were kindly received everywhere.

From Moscow we joined the Southern Express, and for the next three days and nights travelled steadily south-east through the most deadly monotonous Russian plains. We had comfortable sleeping cars, but the train had no dining car and we had to feed ourselves out of tins or from food bought at wayside stations from peasant women; hot water was available free of charge at every stop and nearly everyone rushed out with a teapot to make an infusion of the various substitutes serving as tea and ranging from the dried leaves of a *Vaccinium* to a perfectly horrid preparation of figs. Finally we arrived at 4.30 one morning at the little wayside halt of Prokhladnaya where we had to transfer to a hard-class train and finished the last part of an interminable train journey wedged in between our many packages and a



most varied crowd of more or less picturesque but evil-smelling natives, to arrive thoroughly weary at about 10 A.M. at Nalchik, a small township at the foot of the Caucasus range. It is curious how little one sees of so vast a range of mountains as one slowly approaches it across Russia's plains and how insignificant a range containing peaks of 18,500 and many above 16,000 feet can appear.

At Nalchik station a big touring car awaited our arrival and whisked us to a modern hotel and welcome baths and a good square meal, and after lunch we departed in a Russian-built Lincoln Ford car with double back wheels for Adyl Su, from which we intended to make our first climb to Donguz-orun and Elbrus. Interminably wound the road, first through wide river valleys which, ever narrowing and deepening, brought us through marvellously eroded cliffs, past underground villages inhabited by Kabardars and Balkars, to the small but clean mountaineering inn at Adyl Su. The road was abominable as to surface, in fact only an earth road with the worst ruts roughly filled in with loose stones collected from the meagre fields bordering it here and there, and with a following wind we raised such clouds of dust that we had to halt every now and then for some minutes to allow the wind to carry it far ahead of us and give us sufficient visibility to steer clear of the road's edge dropping sheer for 100 feet or so to the brawling river below us. Adyl Su Inn was pleasantly situated in open pine woods, and great was our joy when Dr. JENKIN with a loud call summoned us to help him admire a yard-wide patch of one of our most notable finds, the new *Daphne glomerata* (fig. 110); it was freely studded with fragrant clusters of ivory-white blooms most attractively set off by the red-coloured tubes of the individual flowers. After a clean up and a meal we spent the remaining hours of daylight in botanizing in the immediate neighbourhood and found some *Primula auriculata* and perfectly glorious groups of *Aquilegia olympica*, which on first sight I mistook for *A. glandulosa* which it closely resembles but it is in every way bigger and bolder and far more branching.

On returning to our inn we found the waitress had been out after flowers too, and each of our rooms was decorated with a huge jug of *Aquilegia* bloom. After a typically Russian evening meal we interviewed a young man who was to be our guide for the district and some peasants who were to furnish us with pack and riding horses, and early next morning we set out through woods of pine, very similar to *P. sylvestris*, past a tented camp for young Soviet mountaineers, and steadily rising foothills rich in mineral springs to the steeply mounting shoulders of Mt. Donguz-orun (fig. 111).

On cliffs in the woodland grew various *Campanulas* of the *Campanula Saxifraga* persuasion, endlessly variable with paler or darker bells and deep or shallow ones, tempting one to split them up into various subspecies or forms. Here and there were clumps of *Rhododendron caucasicum* varying from palest pink to soft yellows and our *Daphne* in increasing numbers. *Trollius patulus* and *Primula auriculata* became plentiful in drifts and various commonplace

herbaceous Geraniums, Lactucas, etc., mingled in the warp and woof of the subalpine meadow carpets.

Further on we found our first clumps of *Sempervivum pumilum* and later on another *Sempervivum*, bigger in every way, which may yet turn out a new species. Crossing various glacier streams and losing every pretence of a track we breasted the ever steepening slopes, the forest was left behind and below and we finally emerged late in the afternoon on the most perfect, undulating alpine lawn carpeted with *Campanula tridentata*, our beloved *Aquilegia* in a reduced form, clumps of *Lilium monadelphum* (fig. 112) and a perfect riot of a cluster-headed *Anemone* which on first sight seemed to be *A. narcissiflora*, which the white form, blushing like apple blossoms on the outside, certainly closely resembled, but soon we saw pale yellow, rich yellow, orange, wholly pink and deep rose coloured forms which left us guessing, one grading into the other in endless variety. I now have reason to think that it was *A. umbellata* which we had before us and we set to and dug and collected bundles of the various and most distinct and highly coloured forms, but alas! hardly any of these arrived home alive and the few that survived did not appear again in the spring, so that this treasure must yet await more successful introduction to our gardens.

Every depression here was red with strong-growing plants of *Primula auriculata*, far finer than any of its kind previously brought into our gardens from Persia and Anatolia, proving that this plant likes running water around its roots just as *P. deorum* insists on growing in Bulgaria.

Here, close to one or two age-old and weather-blasted Pines, we decided to make our first camp, and soon the tents were up, the horses hobbled and a blazing fire going in preparation for the evening meal. Mist was rolling down from the heights and began to veil the awe-inspiring prospects before us of the peaks and glaciers of mighty and lovely Donguz-orun (fig. 113). Wide as is my acquaintance with the mountains of Europe and the Near East, I could not take my eyes off the marvellous picture in front of me. It was breath-taking in its loveliness of outline and colouring, and the green glint of the numerous hanging glaciers threatening to slip down to the main glacier just below us. Over the shoulder runs a pass to the scarcely known wonderland of Suanetia, entirely surrounded by huge peaks and cut off from the rest of the world for nine months of the twelve. We had hoped to explore this district in particular, but seeing nothing but snowfields in front of us we were filled with apprehension and Dr. GIUSEPPI and LAZENBY mounted our two least tired horses and went off on a trot to explore possibilities of crossing into Suanetia next day. Soon they were swallowed up in the thickening mist. I continued my digging near the camp, and cook and co-cook started preparations for our evening meal when thunder began to roll and reverberate through the surrounding mountains and a drizzle began which rapidly increased into furious hail and sleet showers and we began to worry about our two companions prospecting for the pass. At last we heard a yodel call and out of the



FIG. 110.—*LAPINE GLOMERATA* ON ELBRUS.

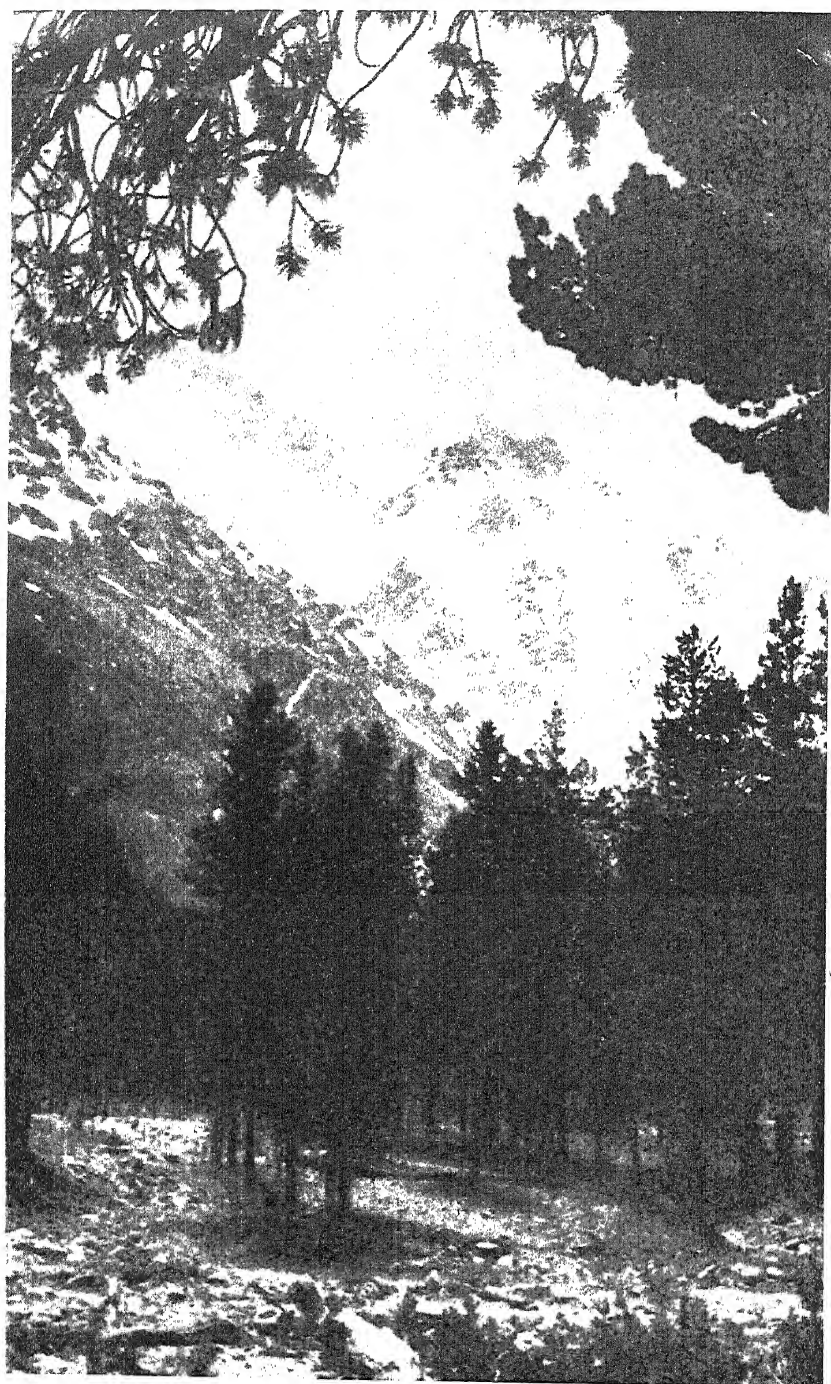


FIG. III.—DONGUZ-ORUN IN THE CAUCASUS.

mist and rain broke the horses in a canter and drenched to the skin our friends appreciated the hot tea with a dash of vodka in it which had been prepared for their reception. After that they changed into dry clothing and brought their wet things to the fire, and the rain having given over we all sat down to the most glorious stew, the combined achievements of our two volunteer cooks.

Darkness falling rapidly, we retired into our tents and the exertions of the day proved a good sleeping draught, so that few of us heard the returning thunder and the avalanches, loosened by the rain, that crashed on the great glacier below us. Waking at five o'clock I found our tent frozen so hard that it was impossible to open the zip-fastener entrance and it was necessary to grope for our spirit stove and to thaw the ice out of the metal links before I could release our party from the patent pneumatic tent Dr. JENKIN had brought to try out on our trip. Apart from that the tent proved a huge success and I can very highly recommend it.

Dr. JENKIN having put his knee out decided to have a rest day, and as Dr. GIUSEPPI had reported various desirable plants from the edge of the snowfields, I elected to stay with Dr. JENKIN whilst the rest of our party, taking some of the horses and the guide, moved on to the gigantic snow slopes of Elbrus, rising 18,705 feet, and therefore, being on the north side of the Caucasus and thus still within Europe, the highest mountain of our Continent (fig. 114).

During the day I took one of the horses and one of our pony boys and went up to the snowed-under pass where, at the edge of the snow and near a forsaken and ruinous sheep-minder's shelter, GIUSEPPI had reported a brown and most attractive Fritillary. This I duly found in fair quantities and, setting the boy to work, we soon had a hundred or so of its small bulbs out of the still frozen ground. The other notabilities of the neighbourhood were huge patches of the rather ugly, yellow-flowered Kabschia Saxifrage *Saxifraga verticillata*, *Lloydia serotina* and the altogether charming rounded hummocks of *Draba bryoides* var. *imbricata*. Collecting my fill I returned to camp and packed these, and soon after we broke camp, loaded up, and returned to Adyl Su. The Fritillaria I believe turns out to be *F. caucasica* and being dwarf, large-flowered and attractive it makes a handsome addition to numerous species already in cultivation.

Meanwhile GIUSEPPI, BALLARD and LAZENBY had reached the shelter hut on Elbrus at the edge of the permanent snow after a very stiff climb over black and scarious rock and scree-like slides of black lava sand to find very much the same flowers as on Donguz-orun with the addition of our first plants of *Primula amoena* (fig. 116) in the typical mauve-blue form and also of a tiny silver-grey Veronica differing from *Veronica telephifolia* which we found later on on another mountain in exceptionally good form. There, too, grew the curious *Salix apoda*, forming low straggly tangles, studded freely with its curiously elongated and candle-like catkins. On the evening of the following day we all joined forces again at Adyl Su and after a good night retraced

our way to Nalchik, arriving in the early afternoon, and after posting off some parcels of plants for home were soon in another car in which we hoped to reach Orjonikidze, which was formerly Vladikavkaz but like so many Russian towns was renamed after the horrors of the Revolution in honour of one of the Red generals. This town marks the northern end of the famous Georgian military highway and boasts two or three quite good hotels, some public gardens and a fine boulevard through the centre of the town; but I must tell you that we did not make our entry there triumphantly in our car. Some hours after leaving Nalchik we managed to break a spring on a more than usually atrocious road and crawled to the nearest village and hunted out the local blacksmith who at once set to and made and inserted a new spring, very skilfully and promptly; but whilst he and his men laboured a thunderstorm broke over us, and after taking the road again we found our car developing a tendency to progress sideways, crab-fashion, and presently it began to wallow in every bog-hole, and as darkness fell we realized the hopelessness of reaching Orjonikidze by car and inquiring at a large scattered village the whereabouts of the nearest railway station managed to limp into it at about midnight and found the whole station packed with patient country folk partly asleep and partly camping upon the floor among their goods waiting for the next train. Some of them had been there two days and each passing train had taken a quota but without noticeable decrease in the waiting crowd.

Another heavy storm had broken over us as we reached the station and convinced us that we had done the right thing in deciding to abandon the car. Followed an interview with the station master and the magical credentials of Intourist gave us the preference, and telephoning forward to the incoming train, which was expected at 4.30, room was reserved for us in its already crowded interior. After booking headquarters at Orjonikidze and sorting out our camp equipment we were soon in a car again and driving at a great rate up the romantic road which crosses this giant range from north to south; past brawling torrents and along fearsome edges of awe-inspiring precipices the road zigzagged its way up and up, endlessly it seemed. The threatening clouds burst and a mild drizzle gradually changed into an icy rain, so that all of us were glad when at last the mountain village of Kasbek loomed out of the mist ahead of us. A village meant an inn, and an inn we hoped would mean hot tea, of whatever kind so long as it was hot, but that is where we were wrong. The village proved squalid and unattractive and the inn knew not hot tea. They offered us vodka and bortsch (cabbage soup with a foundation of mutton-tallow) and that was all, even bread seemed to be rare and unobtainable. However, the inn had a surprise for us. On entering I spotted at once two men in ordinary mountain kit among the motley crowd of Georgian Ingushti tribesmen filling the place with noise and effluvia, and a second glance convinced me that one at least was no stranger to me, and presently I was shaking hands and introducing to my party Dr. KRAUSE from Denmark, who only in April had been an

interesting caller in my garden in England. KRAUSE and his friend had been on Mt. Ortsweri and were waiting for a motor bus to take them down to Orjonikidze and soon departed, but had time to exhibit the finds of the day to us, which greatly whetted our appetites for days in the central Caucasus. Soon we left the inn, where accommodation would have been impossible for us in any case, and proceeding for about a mile farther reached a youth hostel and proposed to put up our tents for the night in the grounds belonging to it. However, the caretakers would not hear of this and cleared one of the dormitories for us, and we brought in our sleeping bags, spread them on the not too inviting bedsteads and contrived a fairly comfortable night. Handing over some of our food to the caretakers our cooks took an offday and watched with interest the preparation of our meal, and whilst still enjoying our food a little group of villagers entered and invited us to a local dance to be given in our honour that night. The rain had cleared and a bright moon was shining and our deputation led us to a hutment near by where rough seats were placed for us against the wall and we watched our entertainment with interest. The band soon tuned up, one old fellow with an accordion, and the dance floor was laid opposite to us, consisting of about 4 or 5 square feet of stout plywood, and soon to their execrable music dance followed dance, mostly men together but occasionally two women would join in a dance, and on one occasion a man and a woman danced the most primitive and not too edifying wedding dance of these simple mountain folk. For us onlookers this was cold sport and we had to fetch coats and rugs to keep ourselves warm, and finally, ascertaining through our interpreter that the band could play jazz, Dr. GIUSEPPI led out a not too comely woman partner and taught her with surprising results the steps of America's latest dance. After that the local policeman in a thick felted coat, a noted dancer, was persuaded to shed his huge garment, which brushed his toes, and with that performance, at which English cigarettes were passed round and enjoyed, we ended the *Entente Cordiale* and retired to our couches in preparation for an early start for Mt. Kasbek (p. 119), the second highest peak of the Caucasus. Horses and their owners awoke us at four in the morning and soon we were mounted and off on our long ascent. Up and up wound the track past a ruined monastery and through some hill villages of all but invisible houses, built against and partly dug into cliff faces. The track wandered here and there between the houses and at times up steep, rough steps, over the flat roofs of dwellings where dung was being dried for firing, until after a few hours all trace of habitations was left behind.

After another half-hour or so the ascent became too steep for riding and the pony boys were left to bring on our mounts by a detour whilst we breasted the steep ascent, stopping here and there to dig fine forms of *Primula amoena* and *P. farinosa* var. *algida*, *Gentiana pyrenaica* and *G. verna alata*. Campanulas were everywhere, mostly the confusing group containing *C. bellidifolia*, *C. Saxifraga*, *C. tridentata* and *C. ardonensis*, all grading into each other to a bewildering extent.



Here some of our party branched off to visit and photograph the ruins of Betlemi monastery, to rejoin us presently at a prominent shoulder appointed for our place of luncheon when ponies and provisions should have arrived. Traversing nearly on the level a long and steeply rising slope we marvelled at the profusion of that lovely *Anemone, narcissiflora* or *umbellata*, whichever it may be, which grew here lush and foot-high with most ample umbels of extra big flowers, much more like an herbaceous plant than the much smaller forms of it that were the rule on Donguz-orun. Where the grass became thinner and more sparse another very lovely *Fritillaria* was discovered, at first sparingly and later on scattered most freely over a wide area. Growing about 6 inches high this carried big nodding flowers of rich canary yellow, faintly chequered with brownish red. Very occasionally a plant would carry two flowers, and what astounded us was the very small size of the bulb which carried such surprisingly large flowers. Even the two-flowered ones had bulbs not exceeding a middling size pea in size and none of them showed the basal offset like minute rice grains which were so plentiful on the Donguz-orun *Fritillaria*. I believe this species to be *Fritillaria lutea* and we were delighted with our discovery. After luncheon we again separated, half the party ascending a steep slope of Mt. Ortsweri whilst GIUSEPPI and I tried how far we could ascend Mt. Kasbek itself. After some toil we reached, at about 11,000 feet, the great glacier descending from the second highest mountain of the Caucasus, and the clouds clearing for a few minutes disclosed the lovely shaped peak of this great mountain which generally succeeds in hiding its head in the clouds. It was unprofitable and dangerous to attempt crossing the mighty glacier, and the flora on our side of it had become decidedly poor and unattractive, consisting mostly of very stunted *Rhododendron caucasicum*, a *Sibbaldia* and an ugly little *Alchemilla* bedded in masses of lichen and coarse mosses. Better luck had attended BALLARD and LAZENBY, who, after traversing some huge snowfields, reached the final cliffs of Ortsweri and at about 10,000 feet they discovered great drifts of the startlingly beautiful *Primula nivalis* var. *Bayerni* (fig. 115), the only species, I believe, of the terribly difficult group of *Nivalis* *Primulas* occurring in Europe, for both Ortsweri and Kasbek are still, at least in part, on the northern and thus European half of the Caucasus range.

They dug up about 200 young and promising plants and presently, perceiving our signals, returned to us in record time, glissading the snowfields in great style. *P. nivalis Bayerni* has handsome rosettes of 4- to 6-inch-long leaves growing somewhat like a leek at the base. From these leaf rosettes spring stout stems some 6 to 8 inches high carrying the handsome umbels of creamy white and delightfully scented flowers. The leaf margins are rolled under and sharply and regularly toothed, Eau de Nil colour above, grey below, and the toothing is margined with pale golden or nearly white farina which also appears on the flower stem. This was the greatest find of that day, but although packed with the greatest care and promptly despatched on our reaching



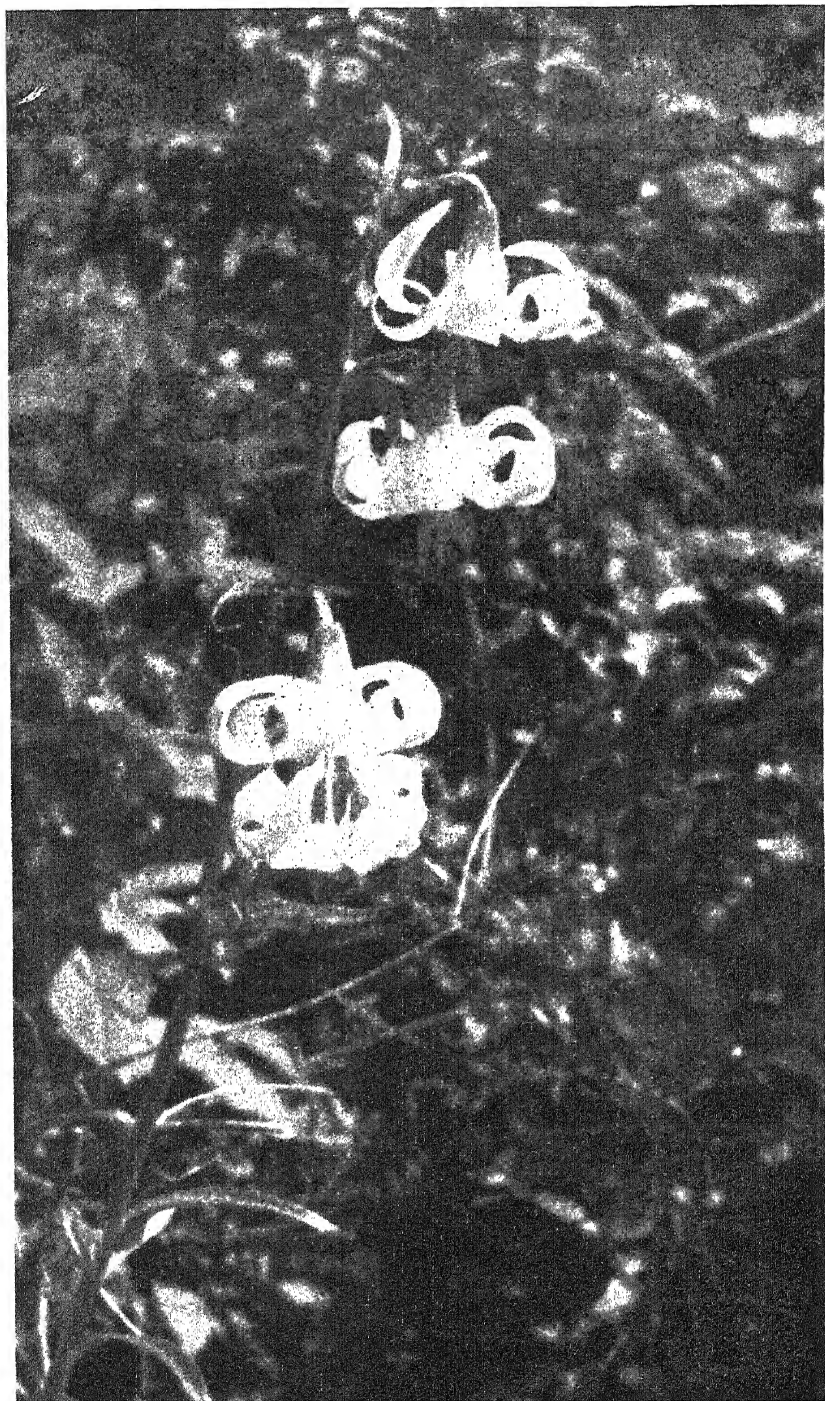


FIG. 112.—*LILIUM MONADELPHUM* IN THE CAUCASUS.

[To face p. 412.



FIG. 113.—DONGUZ-ORUN IN THE CAUCASUS.

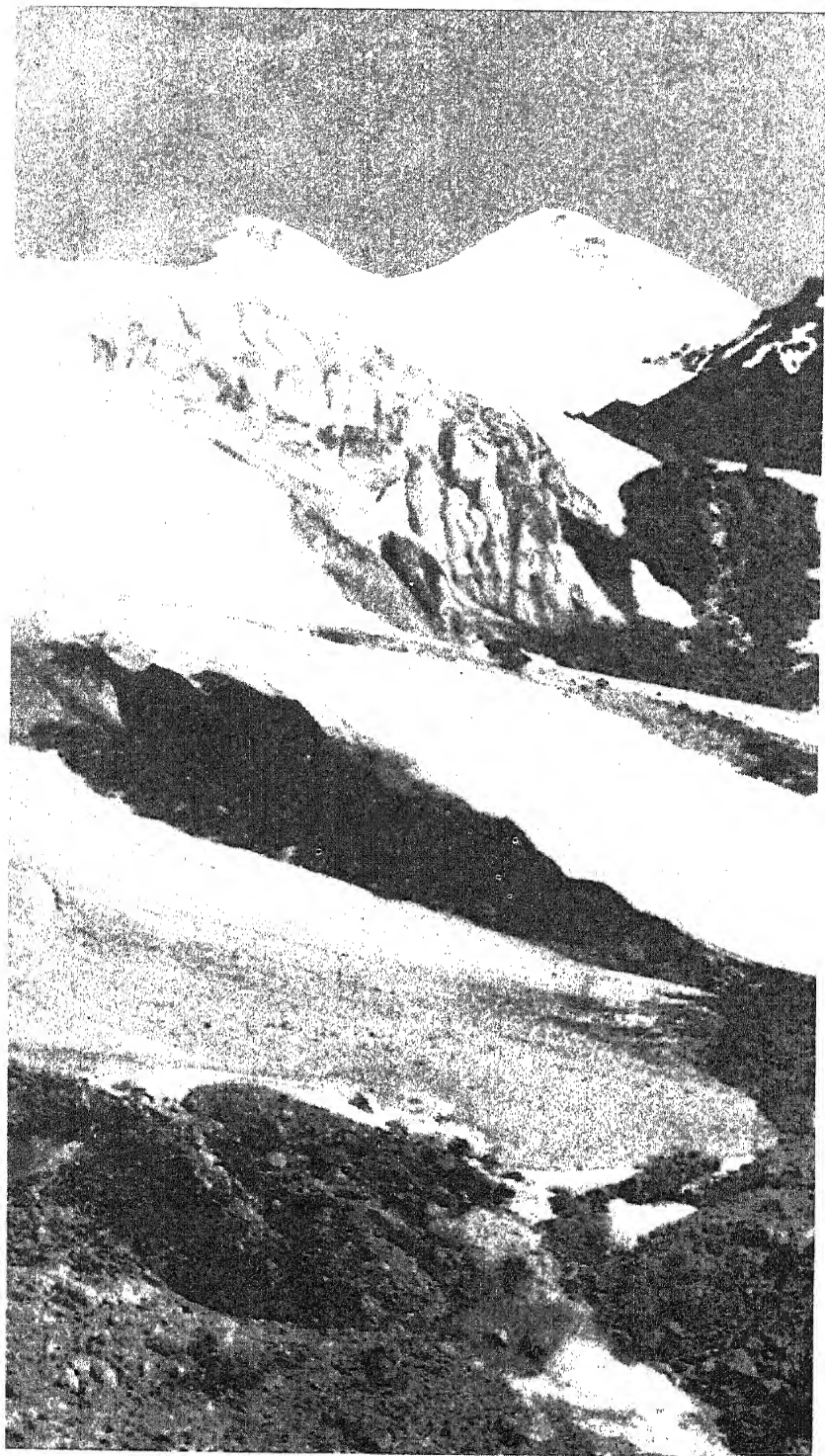


FIG. 114.—ELBRUS IN THE CAUCASUS.



FIG. 115.—*PRIMULA NIVALIS* BAYERNI IN THE CAUCASUS.

[To face p. 413.]

Tiflis, and entrusted to air mail for quickest possible transit, this consignment shared the fate of all our air mail parcels in Tiflis: not a single parcel reached England. Returning to our camp, happy but tired, we prepared for our departure for Tiflis early next morning.

We had ordered a car to pick us up and it arrived promptly to time, to our great surprise in this land of oriental slackness. Having stowed our various and manifold belongings we inserted ourselves in between as best we could, and soon found ourselves breasting the final slopes of the ridge, and after passing some mineral springs where dirty small boys ran out with glasses and jugs of natural mineral water and waylaid our car, we passed some snow-sheds built out over the track and arrived at the division between the two continents. A curious short obelisk marks the divide and soon in long zigzags we are running down into Asia Minor; through more huge snow-sheds with elaborate roof timbering we enter the region of Azalea, and it is truly remarkable that we had not noticed a single plant of these on the northern slopes; here it is by many acres, and away from the edge of the snow already bursting into glorious masses of gold and the air heavy and sweet with the scent of it. After some hours of steady downhill we reach a rest-house and order a meal for which the sharp and cold mountain air of the central crest has given us a good appetite. Here we are amused by the antics of a young bear on a long chain, whose one idea seems to be to get hold of someone's finger and suck it. He is the quaintest thing in living Teddy bears one could wish for and set one longing that one could accept the offer of him as a play comrade for one's children, but, as is well known, bears do not remain trustworthy for long and soon become dangerous with advancing years. Soon we are on the road again, but not before discovering in the garden of the rest-house another *Sempervivum* which we understand the innkeeper's son had brought down from the mountains and used as an edging to a flower-bed. He tells us that in Tiflis we could see thousands of them used that way in the public gardens and that we could purchase them there at great cost. He freely allowed us to take what offsets we wanted, and later on in Tiflis we discover his houseleeks to be *Echeverias* as I had more than half suspected.

Late afternoon brought us to Tiflis, the city of seventy languages and the meeting-place of all the local tribes besides Turkish, Armenian, Persian and other tribes to whom it was the chief market of their world. All this is altering now and the Asiatic town with all its interesting squalor is fast being remodelled. The so-called European quarter already compares most favourably with any town visited by us so far. What pleases us still more is to note that here the people laugh, sing and whistle in the streets and there is music everywhere. All the rest of the northern Soviet lands we had traversed was gloomy in the extreme and nowhere did we notice a happy or even contented face, and we feel pleased with the Georgians surrounding us on every side even if their quaint letters strike us as even worse and more difficult to understand than the upside-down-looking Cyrillic letters so



universally used elsewhere in Russia. Here every notice is published in both languages and the two sets of letters. A very decent hotel awaits us with hot baths and other modern luxuries and, after making arrangements for moving on the following day and our evening meal, we ascend by a cable railway to a pleasure resort on St. David's Mount above the town to listen to Georgian music played on Georgian instruments and watch the local youth dancing. I found neither music nor dancing elevating or even pleasing. My ears are not attuned to oriental measures and notions of rhythm and melodies, the shrieking of some singers being particularly painful to my tympanums, although my friends declared they liked it. It was always so, there is no accounting for tastes.

At four next morning we arrive at the railway station and are furnished to our surprise with comfortable (soft-class) sleeping cars. Soon we are rolling over monotonous plains of lower Georgia and after a comfortable night arrive at Erivan in the early hours and commence a hunt for a conveyance to take us on.

At Erivan station we were received by a wonderful platinum-blond girl interpreter to help our friend DOBIN, who was strange in Armenia and did not know the language. The station is well outside the town, and as some hitch had occurred about the car that was going to meet us there we had ample time to admire the twin cones of greater and lesser Ararat (fig. 118) suspended in a marvellous manner above the heat waves rising from the Armenian plains, and turning north we saw the object of our journey, Mt. Alageuz, floating in space as it were in a similar manner. Erivan is fast being modernized. Near the station are still some streets of low mud houses and it seems curious to see tramlines and trains of tramcars running through these in the middle of the atrocious mud roads, but after a little all this changes and you enter modern Erivan which might be any town in southern Europe were it not for its crowds of dour-looking, ugly people. Avenues shaded by four rows of trees dissect the town, and in the middle are public gardens with ornamental fountains and the indispensable squat-looking statue of Lenin. Near by is also one of their famous parks of Uplift and Recreation and at the further end a tolerable hotel much frequented by Americanized Armenians revisiting the land of their origin. We did not find these any improvement on their stay-at-home relatives, an unpleasantly frowning crowd, but I suppose, bearing in mind their history under Turkish rule, one must forgive them much. We found we should have to give over the rest of the day to sightseeing until a car should arrive to take us to the foothills of Alageuz, and we finished off the day in the park at a concert of more oriental music. The park was overcrowded and every seat in front of the bandstand was taken, but our blonde girl interviewed the leader of the band and promptly seats for us were taken from the stage and placed in front of the front row for the visitors from England, and I must confess, whether it was visiting Lenin's tomb with its endless queues of venerators or attending the Russian Ballet in Moscow or a

propaganda film in some other big town, seats in the front were immediately found for us were the house never so full. The Bolsheviks pride themselves on making the stranger in their midst welcome.

Early next day we motored out of Erivan, at first through paddy fields where irrigation was possible, but soon after over veritable desert with xerophytic plants and very poor grass patches here and there and wherever stone or rock pierced the surface great sprawling masses of a spiny Caper with huge white *Hypericum*-like flowers.

Our car landed us at last at Bururgan, a desolate village where we were soon surrounded by every girl and urchin in that populous spot. I should never have believed that so circumscribed a place could have produced such quantities of them. We had expected eight riding and pack horses here, but there was no sign of them, and DOBIN was sent to interview the local Soviet representative to exhibit our credentials and inquire why our mounts were not there as ordered. After a long wait in teeming rain seven diminutive she-asses arrived and a horse as tall as a giraffe, each ass accompanied by a sucking foal; evidently the asses were quite as prolific as the humans of Bururgan.

We mounted DOBIN, whose heart failed him in the high places on the tall horse, and GIUSEPPI mounted the best of the donkeys; the rest of the party elected to walk, and off started the cavalcade, each animal accompanied by its shrieking owner. Very dreary was the start over barren commons, poor cultivation, a stream or two with little water-mills straddling them, grinding maize and rye, and presently over pasture-covered shoulders where Galegas, oriental Poppies, etc., added interest to the poor and starved-looking grasses until at last we got to outcropping rocks where we found *Campanula Raddeana*, a plant near to *C. Choziatovsky*, *Cotyledon libanoticum*, *Geranium Kotschyi* and a few Tulips which turned out to be *T. montana* var. *Juliae*. They had nearly died down and careful search could not discover more than five bulbs. On goes the weary way up a dried-up river-course, and presently on top of the gorge to our right appear the ruins of the castle of Ampert, said to have been built by crusaders of whom relics such as shirts of mail and curious chain mail helmets and double-handed swords remain in evidence in the houses of the populace, who indeed wear these on occasion and will give displays in sham fights with these clumsy weapons. An hour or two farther we emerge on a high down and an encampment of Armenian shepherds with a sufficiency of brushwood for camp fires. Of the primitive encampments I leave you to judge. Here, too, are swarms of children and some remarkably fierce and wolf-like dogs with huge spine-covered collars. It is unwise to move about freely without a pocketful of large stones. That seems to be the only means of defence against their treacherous attacks, and yet, in spite of these dogs, the camp lost five sheep through wolves the first night we camped with these Armenians.

We pitched our tents on well-manured ground, but indeed there was nowhere else within easy distance of water, wood, or milk, fresh or sour, to help out our commissariat. We sent our horsemen and their

sorry steeds back to Bururgan, telling them to come for us two days hence, and settled down to a night diversified by storms and alarms from wolves, raving dogs and the blazing away of ancient guns, the cartridges of which are refilled by their owners again and again until I should hesitate to fire them. Next morning we set out for the higher slopes, but at roughly 10,000 feet had to give over because of deep snow. We collected Puschkinias at the edges of melting snowfields where their pretty white and pale blue bells emerged exactly like Soldanellas do in our own Alps of Central Europe. With these grew rather infrequently *Chionodoxa Luciliae* and a pretty little Merendera, mostly rosy in tint, but a few white ones were found as well. Under the shelter of a prickly, wide-spreading Juniper I spotted a new *Semprevivum*, differing from all we had found previously, and I conclude it was the Juniper protecting it from grazing cattle that preserved the colony, as nowhere else could we find a trace of this plant. We dug quantities of *Ranunculus ginkolobus* just passing into the sere of ripening seeds. It is a close cousin of our Celandine, and although not without the charm of that harbinger of spring, yet not a great plant to bring home from such a distance. Further we found dying down a *Corydalis* that looked distinct and we managed to dig a few of its curious, almost square tubers. Whilst doing this we were visited by an adventurous-looking horseman on a good horse and accompanied by two fine Saloukies who willingly posed for his photograph, and after smiling at us for digging perfectly useless roots cantered off hunting for gazelles. About this time violent thunderstorms with drenching rain and piercing hail showers broke over us, and our only native companion disappeared with our most treasured digging tool and some of our food. We never saw him again and so we decided to give Alageuz best—a poor mountain from our point of view on the whole—and we retrace our way as best we can to our camp for a most necessary change into dry clothing and something hot to thaw our frozen vitals. In the late afternoon things cleared up a bit and we wandered around the camp of our neighbours and wondered at their hardiness. The floors of their tents were pure mud, and a few rags spread on low platforms of rough stones provided their only beds. Apart from a few pots and pans and a rough churn or two there was no furnishing of any kind. Having previously despatched a runner for our pack animals we break camp and decide to return to an observatory somewhat lower down, and just as darkness was falling we arrive and lighting a fire in its unfurnished limits we spread our sleeping sacks out on the dirty board flooring and so to bed.

In the morning Dr. GIUSEPPI and LAZENBY returned up-hill to the Castle of Ampert to do some photographing whilst the rest of us spread wet clothing and bedding on rocks to dry in the now fierce sun, found a streamlet for a welcome bath, and BALLARD took some good photographs of the two Ararats just appearing over cloubanks at our S.W. horizon. When the party from Ampert returned we upsaddled and retraced our steps to Bururgan and rejoined our waiting car and so





FIG. 116.—*PRIMULA AMOENA* ON ELBRUS.

Overhead and above them a pair of eagles, and many other kinds of birds of prey were common. Here we stopped for hot mutton soup with curiously large yellow and partly roasted peas floating in it, and I think the party was thankful that I had a tin of double-strength peppermint tablets with me to counteract the terrible richness or greasiness of our meal. Finally we reached Nukha and after some trouble secured three phaetons, at least that word in Russian letters was written on our ramshackle two-horsed chariots. We doubted if they would stand the rough journey in front of us. The harness was wired together here and there or mended with string and even the rubber tyres were plentifully bound to the wheels with odds and ends of wire, and thus commenced one of the hottest and most bone-shaking journeys I can remember. Hour after hour over blazing plains and even hotter foothills we drowsed away, for the outlook was monotonous to a degree. Blue mountains loomed ahead in the distance and presently we passed through a few rare villages with long series of more or less derelict watermills and cottages nestling in orchards of chiefly mulberries, apricots, cherries, plums for the distilling of plum brandy or slivovitz, and whole groves of walnuts. Presently the country became more and more stony, a sort of wild common land with wild apricots, grape vines, etc., in every tangle of bushes and traversed by many boulder-strewn stream-beds which henceforth became our road. We climbed in and out of these and marvelled our carriages did not turn over or shake to pieces, and so we came finally past great herds of glistening black, wallowing water buffaloes to the main river in considerable spate and looked out with apprehension for a possible ford. At last this trial, too, is behind us and we enter the orchards of the really charming village of Baschlaïski. Each house is surrounded by walls and its yard entered through huge, double-winged gates through a roofed porch and we found the populace busy at white mulberry harvest. Seeing our party children are sent out to us with huge, shallow, wooden bowls of these mawkishly sweet and insipid fruits, and feeling welcomed we move on to the house of ABDULLAH YUSOPOFF, the local Soviet representative, busily engaged with most of the males of the village assessing the local taxes. Interrupting this he offers us the hospitality of his house, but seeing all our stores arriving thinks we will be more commodiously housed in the local guest-house and soon instals us in what was the house of the local rich man and chief, who, objecting to the present rule, had been conveniently eliminated. Part of this really fine house is now the local crèche, supervised by two soft-eyed and kind-looking women who have not yet forgotten the time of the veil and draw a portion of their garments over the face if too firmly looked at. These bring us water to pour over our hands, and mattresses and pillows and show us to a fair room with a fine roofed balcony attached where most of us elect to spread our own bedding. I must confess to a pleasant absence of the universal vermin, and here we had to await with what patience we could the procuring of horses for the next stage of our journey into the wild mountains of Daghestan.

Baschlaiski itself owns no horses and a man is despatched to the village of Shin, inhabited by Lesghians, a nominally Christian race, for the necessary string of mounts and pack-horses we require. This attended to and having enjoyed Samovar tea and a meal prepared by the women of the house, our doctor friends are called upon to examine and treat some of the local invalids, making sad inroads into my quinine tablets, helped out with my double-strength peppermints and, ushering out our grateful patients who are anxious to examine our sleeping bags and gear, which must seem very strange to them, we retire to rest. A terrible storm broke over us soon after and next morning we learn that the river is so swollen that it is unlikely that horses from Shin could reach us that day, so to make the best of things we explore the immediate neighbourhood, make friends with the numerous children of distinctly Tartar and Mongolian cast, visit and photograph the infants in the crèche and make friends with the local schoolmaster who teaches his boys, squatting on the ground among them and teaching them, to our surprise, Latin characters.

We understand that the people of Baschlaiski are of the Turkise tribe and did not have formerly a written language and possibly this teaching of the characters in general use among white races the world over, excepting only the Slavonic races, points to a general adoption of these characters in the future of the Soviet states. At long last a great clatter announces the arrival of our mounts and presently these enter through the wings of our wide-flung gateway, in charge of a regular old witch woman, the owner of the string, her slightly better favoured maid and a woolly-capped young fellow with an intelligent cast of countenance. We greet them with acclamation, but find our joy is somewhat previous, for now Madame the Witch digs her heels in and starts bargaining and, further, we discover that no pack ropes have been brought, making our pack-horses useless as our village seems as destitute of ropes as of horses. Messengers are sent forth to comb the village for ropes, and on our side the arguing continues as to the price of the hire and the length of time for which the horses are to be at our disposal until Dr. GIUSEPPI gives it up, sits down on a stump, produces his diary and philosophically sets to to write it up. Poor DOBIN and ABDULLAH and the schoolmaster all argue with the old fiend without making any impression and presently she commands her minions to take the horses away again and our hopes sink to zero when a brain-wave comes to us. Inquiring of BALLARD if he had any English cigarettes left and on him handing me his case I distribute *largesse* and lo! the sun begins to shine, our old witch smiles all over her ugly old face and in five minutes the bargaining is done and soon we sally forth through boggy lanes and tracks, over the shoulder of a hill that presently becomes the merest ledge skirting the edge of an abyss overhanging the still raging river below us, and so finally to the village of Shin, situated between patches of meagre cornfields and pretty orchards, chiefly of mulberries as this is a great silk district, every household setting apart a room for silkworms, and it is a common sight to see the

women clambering about in the trees chopping off short leafy twigs to feed their charges. At Shin girths are tightened, luggage repacked and off we go again, following the still turbulent river up its wide and stony bed into the fastnesses of the Daghestan mountains.

The track continues now in one or the other of the three distinct river-courses and now and then climbs up the sheer banks, 40 to 50 feet high, and for a while continues along the margin, to descend presently again into the stream-bed and of necessity the going is slow and weary. Late in the evening we reach a valley branching off to the right, up which lies our road and we attempt to cross the chocolate-coloured floods rolling and tumbling between us and our goal. Deep roars the flood, and in between, half smothered, one hears the grinding and crashing of boulders rolling along below the turbid surface. Our horseman on his lightly laden mount attempts to cross in various places but finds it impossible and after all but foundering several times gives over and advises waiting till the morning when the spate might have abated; so we retrace our steps until a likely camping place is reached and set up our tents, cook a rough meal and are getting into our sleeping bags when the trampling of our horses and the yelling of our horseman brings us out again to lend a hand to hold our stampeding horses and hobble them, after which we begin to understand the cause of this alarm, and crawling up to the margin of the river we enjoy for many minutes the sight of a huge bear attempting to cross the river to our side. He manages, half wading, half swimming, and occasionally washed back, two arms of the river, but the third proves too much for Mr. Bear as it had for our horses, and finally he retires disgustedly to his own shore and, scrambling up the steep bank, disappears in the bushes and we retire once more to our tents, wondering what would have happened if the bear had reached our encampment. Of course, the brown bear is a peaceful creature in summer, but I fear our horses would have returned to Shin whether we had finished with their services or not.

Next morning broke bright and sunny and at an early hour the party was again at the ford, and this time our horseman, Dr. GIUSEPPI and our two young friends managed to cross the still deep and rapid river. JENKIN and myself, the heavyweights of the party, found the crossing too much, and when JENKIN's horse went down under him, incidentally soaking our plant press and two sleeping bags, we deemed it wisest to desist, and, arranging to meet again at our last camping place that evening, we divided into two parties, JENKIN and I exploring the hill-sides on our side of the river, falling in with small parties of Lesghians going up to prepare hutments on the high cattle stations for the season and collecting some interesting forms of *Saxifraga cartilaginea*, etc.; but the flora was far from rich and certainly not very varied.

In late afternoon our friends returned and brought little else but some good bulbs of a lily of the monadelphum type (fig. 112), and the evening looking fine and our bedding, etc., having been thoroughly

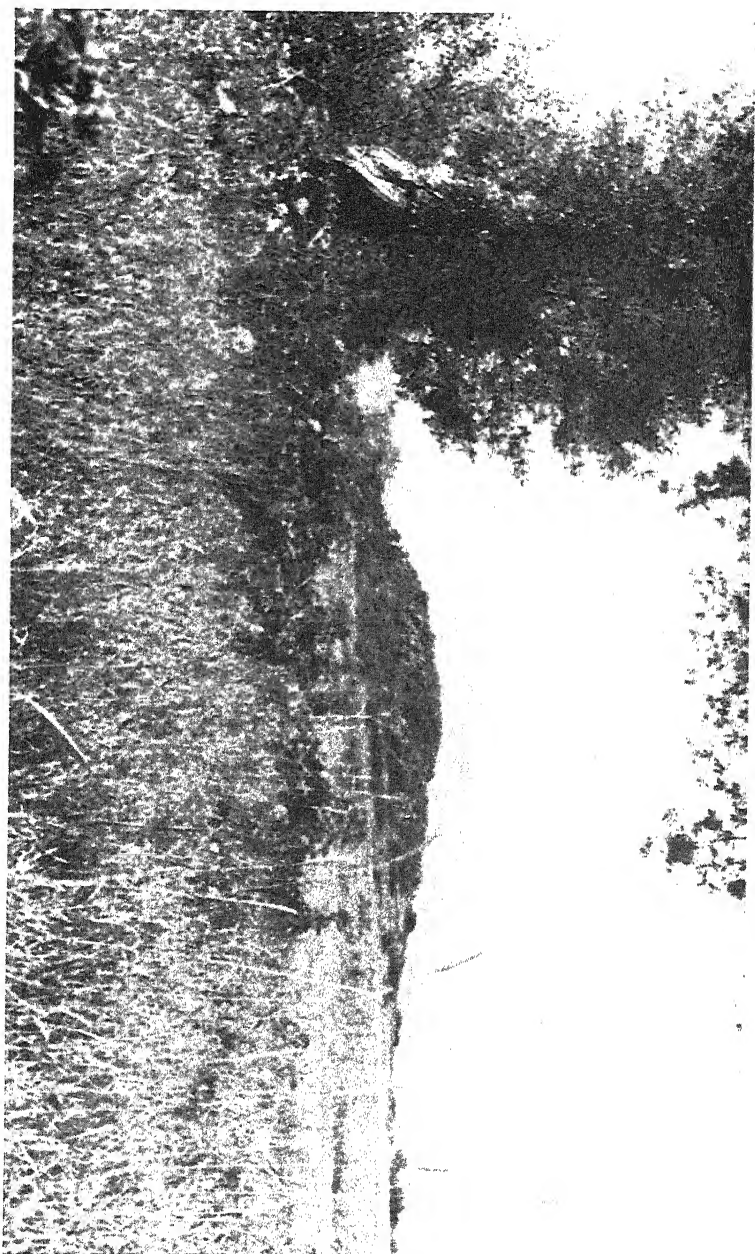


FIG. 118.—MT. ARARAT.

[To face p. 420.]

FIG. 119.—SHAN FROM KASBEK.





dried we decided to return and to attempt a richer and more promising district as soon as might be possible. By a quick march we managed to reach Baschlaïski as it darkened, having spent some little time at Shin photographing the Lesghians, noted far and wide for their beauty. Perhaps they were lighter in colour than many of the tribes we had met and less lowering as to face, but I cannot believe that many great harem beauties had been sold from that district as report had it. Our hostesses gave us a friendly greeting and boiled us a great dish of very good rice which, added to our own provisions, made a satisfying meal after a strenuous march, and next morning brought our three merry Jehus who still remembered a few simple English words we had taught them, and soon we were racing towards Nukha. Arriving there we found our funds exhausted and DOBIN had to hunt up the local Soviet representative again to borrow money for the hire of a return bus to Evlak, where we arrived late in the evening but in ample time for the night train to Tiflis, which we reached in the early forenoon. Still longing to see something of romantic Suanetia we decided to try to enter it from the south and took train once more, this time to Kutais, whence, we understood, motors and later on horses might take us to the promised land. Alas! it was not to be. Soon after we entered the train thunderstorm after thunderstorm broke with torrential rain, and on waking next morning the train was crawling through wide, flooded areas, and on finally reaching Kutais and hunting up the one and only local garage we learnt that none of their cars that went out in our desired direction the day before had returned. Getting the telegraph to work we heard nothing but reports of bridges washed away and impassable roads and we also learnt that there would be no train back to Tiflis until late that night. Kutais is not an inviting town. A good half of it seemed derelict, indeed the whole place looked half dead, and the only hotel was a good two miles away from the station. As that seemed the only possible place for us to spend the many hours of waiting we stored our goods at the station and went there, ordered a meal and asked for a private room and went to sleep until late in the afternoon when we searched out the usual Park of Rest and Mental Uplift and found some seats under some shady trees. As no uplifting was going on we hailed some boot-blacks and had our boots polished, for they needed it after the walk from the station, and after that looked round for shops in search of local curios, but finding the few shops that were open had nothing to sell we mostly went to sleep again until it was time to find our train. We had arrears of sleep to make up, and although we grieved that we had been foiled in reaching Suanetia for the second time, we kept smiling and hoping a third attempt *via* the Ossetian military highway would finally land us in Suanetia; we prepared ourselves for another night in the train and reached Tiflis in the morning.

Through covering all these immense distances our time was beginning to grow short and, apart from visiting the really notable museum of Georgia and the Caucasus with all its treasures set out in an educational

and artistic manner, we wasted no more time in Tiflis but settled our bills and were soon recrossing the range once more by the Georgian military highway. We reached Orjonikidze without further incident, and storing plants collected during the crossing partly in the well-shaded garden of our hotel and partly in the ice cellar, we engaged a new car and started off across wide plains towards the Ossetian highway, the only other possible means of crossing this enormous chain of mountains from north to south or vice versa. The train circles the range and there is no longitudinal road at all. Our main direction was westerly, partly through cultivated fields with watch towers placed as fire lookouts and for scaring birds, and scattered widely spreading villages, unhomely-looking because of the utter absence of churches or outstanding buildings, and gradually turning we approached the mountains again and finally entered the valley of the Ardon river. Here abounded sulphur springs, and the objectionable smell of the sulphuretted water spoilt what in other respects was a beautiful drive through finely wooded foothills. Great activity is in evidence a little deeper into the mountains where huge factories, taking advantage of water power and plentiful mineral riches, are springing up at every suitable point and colonies of workmen's dwellings are assuming the proportions of considerable towns. Presently these, too, are left behind and we enter the wild hills. Stopping our car in likely places we collect some further *Sempervivums*, *Sedum pilosum*, *Campanula ardonensis*, and on a sheer cliff we joyfully discover the extra-tight-growing form of *Gypsophila aretioides* known as var. *caucasica*. Occasional cushions of it are just opening its minute, pearly white flowers and as I write one of the collected pieces stands on my desk reminding me with several fully expanded flowers of our first meeting with this little treasure. Narrower and steeper grows our road as it twists between towering cliffs, and deeper grows the Ardon Gorge below us, and one cannot say that the road improves, yet worse is in store; branching off to the right we enter over a very shaky wooden bridge the Zei Valley (fig. 120) and praying that we may not meet another car are driven at a furious rate along a greasy, narrow track with the Zei river brawling always on one side below us and a towering cliff on the other side until we finally emerge in pleasant woodlands and after some miles reach the Zei Sanatorium which is, by courtesy of the Soviet, to be our home for the next two or three days. This is a lovely and truly alpine spot, situated in primeval woods of various Conifers, flanked by great mountains, and in a pleasant glade where two valleys meet, each blocked at the end with gigantic peaks and with glacier streams raging from both, combining into a marvellous green and foam-flecked torrent at our feet, we enter a wide, grassy compound with a huge veranda, dining hall and two timber-built dormitories; we discover there is even a bathing house where hot baths are possible, and soon we are allotted clean quarters and we proceed to spread a much-needed meal on a wide balcony with a superb view. Whilst light lasts we explore the nearer ends of both valleys, and much impressed with



the flora we plan trips for the days in front of us. Here it was that we found *Geranium Renardii*, a fine big rosy form of an Aster near *Aster alpinus* and Glory of Glories, the exciting *Draba mollissima*. So like an Arêtian Androsace does this appear as it nestles under overhanging ledges well up on the cliffs above us that we indeed took it for such until we succeeded in scaling up to it and by the remaining seed pods found that we had a Crucifer in front of us. Unlikely as this plant looked to travel over 2000 miles to England, it is owing to the marvellous packing of Dr. JENKIN, to whose skill and patience I delegated the task, that we have it to-day in good health in our gardens, from the few pieces that consented to strike as cuttings after the long journey.

Under the Pines near the Sanatorium was a wealth of undergrowth including unbelievable carpets of *Linnaea borealis* draping themselves over fallen and decaying tree stems and growing mostly in rotten wood. Here, too, are *Vaccinium Vitis-Idaea*, *Arctostaphylos Uva-ursi*, *Vaccinium Myrtillus* and another which I take to be *V. uliginosum*, *Pyrola uniflora*, *P. rotundifolia* and *P. secunda*, thickets of *Daphne Mezereum* and *D. caucasica*, *Lilium Szovitsianum*, various tall Campanulas, Astrantias, *Geranium sylvaticum* and a host of other pleasant things. Passing through the woodlands we find where woodland and old moraine meet great clumps of *Habenaria bifolia* with 18 or more noble spikes of flowers, utterly unlike what one sees at home mostly as single-crowned plants. On the moraines abound *Dryas octopetala*, *Silene acaulis*, a curious little bright golden yellow but annual Senecio, *Polygala alpestris* in various colours, the very fine *Primula macrocalyx* and what we suspect to be a hybrid form of this with *P. amoena*, which becomes plentiful here and is collected in pink, nearly rose, pale mauve and purple forms, and presently we find a few albino forms too. Wedged in between rocks we find quaintly attractive clumps of *Asplenium septentrionale*, various dwarf willows, and on little ledges of the sheer cliffs a delightful little Muscari, parti-coloured on each spike from purest white to soft china blue.

Scrambling up some very steep screes we discover with joy a most charming *Corydalis*, just two or three ferny leaves flat on the stones and short spikes of soft yellow, pure white or soft blue flowers, all of them darkening at the knobby end of the spur, scarcely two plants quite alike in colour; and let me tell you it is heart-breaking to dig the tubers. Whole portions of the scree come sliding down as you dig and we spent hours in removing the limited quantity we finally secured. Small hanging glaciers made the position somewhat dangerous and as the sun mounted we found it wiser to keep on the cliffs; but presently we spy a white *Primula* high above us in a cleft just below one of these glaciers, and GIUSEPPI and I could not resist but scrambled up to find again the *P. nivalis Bayerni* in perhaps even more beautiful form. We select a quantity of hopeful-looking youngsters and retire with our booty without being overwhelmed by those threatening blue and green ice masses so close above us, and on retracing our steps find in the bed of a little rill thousands of feet lower down two huge and aged clumps

of this *Primula* with nearly ripe seeds. This was a second chance that could not be missed and, in spite of their weight, they had to come out, and being papered to secure any seed from bursting capsules these go into my already heavy rucksack and so back to lodgings. These *Primulas* went into the ice cellar at Orjonikidze and later on travelled upright in my charge the whole way home. On arrival we found all the pods had burst green and shed their seeds into the parcels and these were carefully secured and sown, so far without results, but I still have hopes to see them come up next spring. The following day we went up the Zei glacier, at least we three older ones did, leaving our young friends to climb a fearsome-looking ridge dividing the two valleys, the reputed home of herds of big horn sheep and ibex. I am glad to say they found a route across and rejoined us in our valley towards evening after crossing the enormous glacier of Zei. In the meantime we had ascended far up that valley and added to our bag *Campanula kryophila*, *Geranium Renardii* and *Draba mollissima*, and GIUSEPPI, who, leaving us digging or resting, ascended still higher into a branch valley leading to Gloor, found the very rare *Viola pumila*, which, I think, is to be counted among our complete failures. We had ascended to about 11,000 feet in both valleys, above which eternal snow made collecting hopeless. Our young friends probably reached 3000 feet higher, but on the sheer cliffs found nothing to add to our knowledge; theirs is the satisfaction of carrying out an hitherto unrecorded climb and a memory of unforgettable views.

Highly pleased with Zei we must, however, leave this lovely spot to try for the last time to reach Suanetia, and so retrace our way to where we left the Ossetian highway some days ago, and turning right, where we rejoin the main valley, drive deeper and deeper into the range and finally arrive at the Mamison Pass which leads straight to this land of mystery, when the snow allows. The Suanetians, it must be confessed, have a dreadful reputation—they are raiders and stealers of women to a man; and as you approach their boundary fortified villages and farmsteads with huge towers of refuge become a feature in the landscape. They are, however, hospitable to the stranger and make him welcome, but three days are the limit of hospitality, after which he has to accept hospitality from a new host, who in turn protects and feeds him, and if a guest outstays that limit he becomes fair game to be plundered or worse and even the all-powerful Soviet has not yet been able to alter this age-old rule. Alas! the fates remain unkind. After a whole day along the edges of fearsome precipices, along roads that have not had attention for years and, precarious at their best, are now partly covered with landslides or diversified by huge mud wallows where springs had seeped and where the car sticks time after time and is only eased through by our combined man-power, we finally reach at about 8000 feet a shelter hut maintained by the Government and there to all intents our road ceases and we make quarters for the night. A drizzle had come on and made things still less inviting, and whilst we take possession of the only spare room and prepare a meal Dr. GIUSEPPI

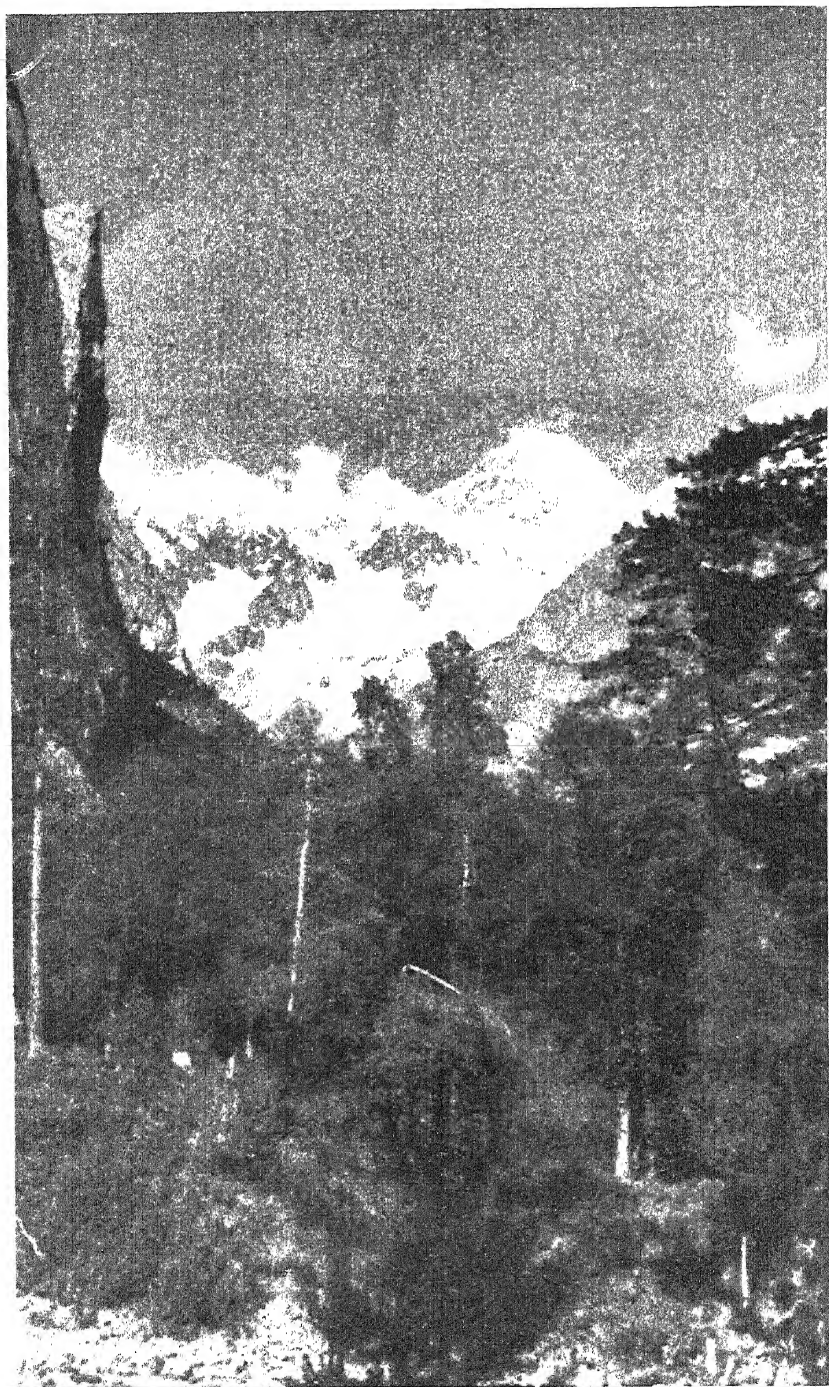


FIG. 120.—IN THE ZEI VALLEY.

[To face p. 424.

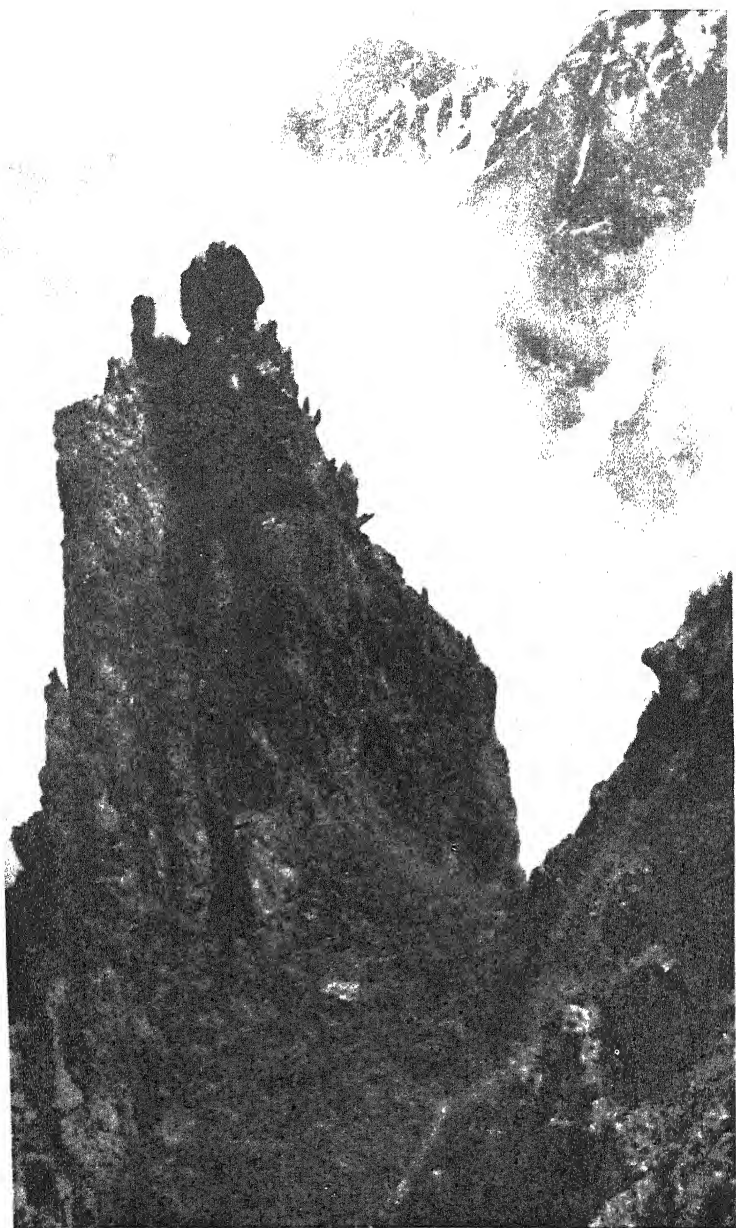


FIG. 121.—SALFEDAR IN THE CAUCASUS.

restlessly leaves us to prospect our chances for the morning. Towards dusk, getting anxious about him, we all follow in his tracks and after a few miles meet him coming back, deeply discouraged to report that Suanetia is still hopelessly snowbound against us. After an uneasy night we wake to more drizzle and do not like the outlook of the long, long drive down that impossible pass, worse now that the surface is all mud and grease, and our two doctors decide to walk down to the last village, and after their departure we load the car and ourselves advance ahead to give warning of the worst places. In half a mile the car sticks, but we are lucky enough to attract some natives with whose aid that bog is negotiated, but worse is to follow, and we nearly lost our car on later occasions. At the best the road was not wide enough for the width of our car and it was only owing to having double back wheels that we had arrived at the shelter hut. To-day, with the roads slimy and with the camber towards the abyss, the car repeatedly slips over the edge with one pair of back wheels and has to be jacked back into position before the rest of the car follows and one really cannot blame our friends for not trusting their lives to such conditions. Becoming immovably stuck we leave the car to DOBIN and the driver, and hurry on to a little settlement we remembered seeing the previous day to obtain horses if possible to extricate the car and bring our goods down to a better road and luckily find in it a man who had been to Seattle and had a few words of American English, and with his aid we succeed and after midday rejoin our friends, and finally, after running out of petrol and siphoning from a tank of a lorry we are lucky enough to meet, we reach Orjonikidze late at night, after an affray with an armed peasant who threatened to shoot our driver with whom he disputed the road and whom it took all DOBIN'S diplomacy to pacify.

Next day we visited a Government dairy farm, the pride of the district, and found it marvellously well kept, but that was no wonder, as the 200 cows there had no fewer than 96 persons to look after their comfort and we came to understand why there were no unemployed in Soviet Russia.

We had to sample the meal that was just being served to the workers and found it good and ample. All the workers are housed in barracks on the estate, but whole families have only single rooms. The pay is 90 roubles a month, out of which 30 are stopped for food and 15 for rooms, which, at the exchange of about 200 paper roubles to the pound sterling, did not seem excessively high. Yet it may be preferable to the dole and the workers did not seem unhappy or too badly clad.

We visited also the museum of Ingushti antiquities and made arrangements for our return to Moscow, but having a day to spare JENKIN and our young friends decide to have one more look at Kasbek, and GIUSEPPI and I, much wishing to sample the flora of the only limestone peak in the district, decide to climb Mt. Armchi, only some 8000 feet high and a table mountain at that, a place of pilgrimage to the

Ingushti tribe twice in the year and with a huge dew pond or lake on its flat summit.

Our three friends departed at once by omnibus to the village of Kasbek, and GIUSEPPI and I, with the addition of a girl interpreter speaking both Russian and Georgian, depart by car, early in the morning, to Armchi. Arriving at a sanatorium about halfway up we were lucky enough to interest the son of the doctor in charge, a bright youngster with some knowledge of German, and he too joined our party, bringing his huge, wolf-killing dog, Wassa, as well, and we began our hot and tiring climb through the very interesting Ingushti villages with their fortified towers and curious family mausoleums and learnt that these people remain armed as in the past and free from all taxation and found them a fine, manly race of typical mountaineers. We found plenty of *Anemone albana*, of the *Pulsatilla* group, which is, in various colour forms, widely spread in these mountains, unbelievable masses of a *Sempervivum* or Rabbit Cabbage which has turned out a new species according to Dr. TURRILL of Kew, and later on a new *Campanula* which yet needs identifying when the very few plants I managed to get home shall consent to flower. At the very summit Dr. GIUSEPPI found and managed to collect three plants of the lovely deep blue, crevice-haunting *Omphalodes rupestris*, and just before returning the distant clouds broke and GIUSEPPI managed to get a perfect photograph of the peak of Kasbek from where we thought our friends were about to part at that moment. Over hill meadows just beginning to adorn themselves with *Scabiosa caucasica*, our only falling in with this fine plant, and the type form of *Pyrethrum roseum*, the parent of all the various garden forms, and countless other herbaceous plants, we finally reached the sanatorium again, where a curious game of Fist Ball was in full swing. After a rest and a meal we returned to Orjonikidze, where we picked up our plants from the ice-cellar and prepared for our departure at midnight and so for our final meal in the lamp-lit garden of the hotel until it should be time to go to the station.

After a most successful tour all became chaos now; our luggage had preceded us to the station, and as our own fearful old creak of a car staggered into the station we saw the train steaming out. Luckily we had the hotel manager with us and telegraphing ahead we set out over trackless plains in our endeavour to catch our train at the station of Mineralski Voda, in which we succeeded but not before a car from there with powerful headlights had found us lost on the plain and guided us in to begin the most impossible three-day ride in one of Russia's infamous hard-trains to the capital and thence home to England.

The least said of this the better. After Moscow our difficulties ceased and we came home the rest of our long journey in civilized comfort, and even that bad patch that we struck in the end will not make any of us regret having visited this highest and least known range of mountains in Europe.

## WHAT LOCAL SOCIETIES CAN DO.

AN ADDRESS DELIVERED BY THE ASSISTANT SECRETARY ON  
JULY 9, 1936, AT A CONFERENCE ORGANIZED BY THE HIGH-  
CLIFFE HORTICULTURAL SOCIETY.

I HAVE been asked to say something on the subject of what Local Societies can do to advance gardening, but it would appear that Highcliffe is one of the places where such a talk is least needed, for it is evident that there is a very live society here already.

There is, of course, a very great deal that a local horticultural Society may do, far more than it will be possible for me to deal with in the short time at my disposal.

Perhaps no one activity, however, has such a definite effect on gardens as a well-run flower show. The spirit of friendly rivalry to which a show gives rise cannot but lead to better gardens. The most obvious effect is an improvement in the standard of cultivation, for he who does not trench his ground or who neglects his plants in any way cannot hope to be among the prizewinners. True, I knew a man who paid no attention to his garden and, indeed, had no garden at all, and yet won the first prize in a class which was only too correctly specified in the schedule as "A collection of vegetables"—but that is another matter.

The other important way in which a show tends to improve the gardens of exhibitors is by encouraging the cultivation of a greater variety of plants, especially of flowers, and by encouraging the growing of new and improved varieties. The last is a very important matter, and the full effect can be obtained only if it is laid down in the schedule that everything exhibited must bear a name label. The regulation should be so worded that, if the exhibitor does not know the name of his variety, he shall be at liberty to put "Variety unknown," and, except where fraud is proved, incorrect naming should not disqualify, but it should be made clear that in a close competition correct naming will be taken into consideration by the judges.

The framing of the schedule of a flower show is an important thing from many points of view and it cannot be done too carefully if misunderstandings and resultant disappointments are to be avoided. It is a good plan to have a small committee to revise the schedule each year, and the meeting should take place soon after the annual show, while the whole matter is fresh in members' minds. One thing I would especially stress, and that is the desirability of varying the schedule from year to year by dropping some classes and introducing others. In that way the show can be made to encourage the cultivation of a greater variety of plants and to interest a larger number of people.



It is not an uncommon thing to find the whole of the classes at a show confined to members of the society concerned. The wisdom of such a course is open to question. There should, I think, be at least one open section. If a non-member, perhaps a man from another village, can beat any of the members with certain kinds of produce, he will, by exhibiting, set all the members a higher standard after which to strive. Moreover, he will have added to the things worth seeing at the show, and in both ways have done members a service.

Again, if a non-member wins a prize, the secretary should have little difficulty in inducing him to pay a subscription and become a member. If, on the other hand, he does not win a prize, he can have done no one any harm, especially if he has been required to pay entry fees, or, if all pay entry fees, higher fees than members pay.

Whenever funds permit, it is a good thing to have a number of classes for novices so as to encourage new exhibitors. Many beginners will exhibit in novices' classes who will not venture at first into competition with old stagers.

Many Societies have no classes for the housewife. It is said that God made gardeners and the devil made cooks. If that is so, every effort should be made to improve the devil's handiwork, for otherwise much of the results of the gardener's toil will be lost. It is, I think, a good thing to have classes for jam and bottled fruit. A class for boiled potatoes often reveals the fact that some do not know how to cook that everyday vegetable, and at the same time enlightens the ignorant.

I trust that I shall be treading on no one's toes, for I also think that a class for home-made wine is not a bad thing.

Many Societies have a class for collections of wild flowers made by children. The advisability of having such classes is doubtful, first because no cultivation is involved and, secondly, because there is a danger of encouraging the destruction of wild plants. If notwithstanding these objections a class for wild flowers is provided there should be three stipulations :

- (1) A list of the plants in the collection should be required so as to encourage the children to learn the names ;
- (2) The inclusion of rare plants should be discouraged ; and
- (3) The uprooting of plants should be discouraged.

It is better to encourage children in what is definitely gardening. The Horticultural Society might make itself responsible for the prizes for the best plots in the school gardens and provide classes at the show for pot plants grown by children. Geraniums are good plants for such competitions because they are cheap and it is easy to obtain a large number of uniform young plants, so that all the children get a fair start. Daffodils and tulips are also excellent for the purpose, while a class for a pot of mustard or cress is a good thing for the little ones, for quick growth is necessary to arouse and maintain their interest.



The boys' love of hunting can be put to good use by providing classes for queen wasps and cabbage butterflies. If, however, such classes are adopted, it is essential that the schedule should stipulate that exhibits will become the property of the committee. Otherwise they are apt to appear in more than one year and in more than one place.

It may not be amiss to say a word upon the subject of harmful things which a show may do. Thus, if, as is sometimes the case, classes are provided for plants grown in a particular way when it is known that it is not the best way, the result is to encourage the continuance of less good methods. A class confined to onions sown out of doors in the spring is an example of a class which encourages a method which is not the best.

Again, as mentioned already, the show should not be an end in itself but primarily a means of improving our gardens. If this is kept in mind classes which encourage the cultivation of plants which are of little use except for the show bench will be discontinued. To give one example—a class for coloured potatoes encourages people to grow varieties which they certainly would not do if there were no such class and they considered only what varieties give the best results for the table. Let there be two classes, one for round and the other for kidney potatoes. If a coloured potato can hold its own against the whites, let it; but if it cannot, then why encourage people to grow it?

The same sort of thing applies to celery. If a pink or red variety can hold its own against the white, well and good, but do not have a class confined to coloured varieties.

With vegetables, this matter of what is required for the table should be kept constantly in mind. Now coarse vegetables are not desirable and, therefore, should not be encouraged. There is, of course, no harm in one "stunt" class for, say, the largest marrow, though I do not think it does any good except for publicity. People go away and say "My word, you should go to the Flower Show and see the enormous marrow that So-and-so is showing," and the attendance thus benefits, but I do not think there is any other advantage.

But to have a whole series of classes for the largest this, that, and the other, is, I think, a mistake. Thus one Society I know has ten such classes. They are for

the largest potato,  
onion,  
tomato,  
marrow and  
dahlia,  
and the longest cucumber,  
carrot,  
stick of rhubarb,  
pod of peas and  
pod of scarlet runners.

Many Societies hold not only one big annual show, but also a spring show—primarily for flowers. Such a show is well worthy of consideration, for it encourages the cultivation of spring flowers and it is, I think, in the spring that flowers do most towards the brightening of our lives. Such a show provides a particularly good opportunity to encourage the love of plants in children, for, as I have already said, bulb-growing competitions are easily organized and readily appeal to boys and girls.

Again, many Societies have competitions in connexion with the monthly meetings held during the autumn and winter. These exhibits of flowers, fruit and vegetables, some of which are not available at the time of the annual show, add interest to the meetings. Thus there may be at different meetings classes for such things as Chrysanthemums, Michaelmas Daisies, Parsnips, Brussels Sprouts, Savoys, pot plants.

An activity allied to the flower show is the garden competition. Here again the friendly rivalry of competition produces a marked improvement in the standard of cultivation and also in variety and neatness.

Competitions for the best-kept allotment, back garden and front garden are common, and all undoubtedly do much good. There are two details that I would mention in connexion with them.

One is that it is essential that the gardens should be pointed at least twice at an interval of not less than a month. If the pointing is done only once there is a great temptation to "window-dress" too much, *i.e.* in the case of an allotment or vegetable garden to have the whole allotment or garden full of crops mature at the time of the inspection, with the result that there is a glut of such things as peas and lettuces at the time of the inspection and a scarcity shortly afterwards. A second inspection necessitates the provision of a succession of crops, including plantings of the cabbage tribe for late autumn and winter use.

The second is that the scheme for pointing gardens should be arranged with the crops grouped. If there is a maximum number of points for each crop there is a temptation to plant so many different kinds of crops that the amount of produce obtainable from some of them is too small to be of any use. Thus I remember seeing gardens in which Asparagus was represented by one plant, Jerusalem Artichokes by one plant, and so on, in an endeavour to get points.

A form of garden competition which is not as common as it might be is one for window boxes. In towns such a competition brings into a Society people who would otherwise not join and, of course, the benefit horticulturally is obvious.

Another form of garden competition which has much to recommend it is one for some particular crop. Thus one Society I know has competitions for

The best bed of onions ;  
The best row of scarlet runners ; and  
The best row of peas.

Many people who, for one reason or another, are not prepared to enter a competition for the best allotment or the best garden will enter a competition for some particular crop on the cultivation of which they rather pride themselves.

Every Society should have a course of lectures and discussions each year during the autumn and winter evenings. There is usually no difficulty in obtaining speakers, for no class of people is so ready to impart its knowledge to others as gardeners.

It is desirable that every young professional gardener should be able to attend a course of instruction on the principles underlying his craft. The best people to conduct such classes are usually the members of the County horticultural staff, and if the young gardeners in a Society's area are unable to reach any centre at which a course of instruction is held, the horticultural Society is the body which should take the matter up with the County authorities.

The average amateur gardener has had few opportunities of learning the best ways of carrying out the various operations which gardening involves. In most cases, I suppose, he saw his father or someone else do things when he was a lad, but he was then more intent upon cricket or football and paid little attention to the garden. Consequently, when he marries and has a garden of his own he has little to guide him except what he reads. Reading is good, but it is not as good as demonstration.

Many amateurs would therefore welcome demonstrations by professional gardeners on such things as

Seed sowing—both in the open ground and in pots ;  
Pruning roses and fruit trees ;  
Taking cuttings ;  
Pricking out and transplanting, etc.

A Saturday afternoon is usually the best time.

The gardener who prides himself on never reading anything about gardening is now becoming rare, and that is a good thing, for, while a garden is the best place in which to learn gardening, much can be learned from books. Every horticultural Society ought, therefore, to have a library from which its members may borrow.

And that brings me to a very interesting activity of a Society in my own neighbourhood. The Guildford Horticultural Society runs an excellent little monthly *Journal* consisting of 16 pages, including those which bear advertisements. Not every Society is large enough to follow Guildford's example, but many are or could be.

Some Societies have a panel of people who are able and willing to advise other members upon particular subjects, such as the planting of herbaceous borders. Many a beginner would be only too glad to be able to obtain a planting plan for a border, for he is puzzled to know what plants to buy, how many he needs and how to arrange them. And so with other things such as roses, fruit trees, etc.

It is an excellent plan for a Society to have an annual excursion. Usually the excursion will be to some well-known public or private garden, but occasionally to some big show such as Chelsea Show, Shrewsbury Show or Southport Show. These excursions provide not only opportunities for getting to know new plants and new methods, but also opportunities to get to know fellow members and to learn that So-and-so is really quite a decent sort of chap although we had never spoken to him before. And that leads to friendships and the interchange of visits and plants, and so to better gardens.

In recent years it has become quite a common practice for local Societies to engage in trade, *i.e.* to go in for co-operative buying of seeds, tools, manures, etc. I am not at all sure, however, that this development is a desirable one, and it is not one that I would recommend.

On the other hand, the other day I came across a most interesting example of co-operation which might well be adopted in many of the new housing estates, although, of course, there would be little to recommend it in such a well-to-do locality as Highcliffe. The Society to which I refer had lawn mowers, rollers and garden shears which members were at liberty to borrow on payment of 3*d.* for a mower or roller for three hours and 1*d.* for a pair of shears for a day. And the scheme was very popular.

I think that many local Societies might well have a knapsack sprayer for the use of members for spraying fruit trees and roses.

From time to time questions arise in every community regarding such things as the destruction of roadside trees, the planting of trees by the sides of new roads, the planting of public grounds, and the like. These are matters in which the horticultural Society should take an active interest and bring pressure to bear on the local authorities to see that the amenities are not impaired but improved.

I commenced my remarks with something about shows, and, if I may, I will revert to that subject with a story which I have on excellent authority.

One of the judges at a show in the north pressed, or attempted to press, his thumbnail into one of a beautiful brace of marrows. They were small, and looked young, but were hard. A closer examination revealed the fact that the marrows were made of wood, beautifully fashioned and painted, the exhibitor's occupation in life being that of a pattern maker. And when called to account he said: "Well, you've caught me this time, but I got the first prize last year!"

There is, of course, a moral, but I need not point it.

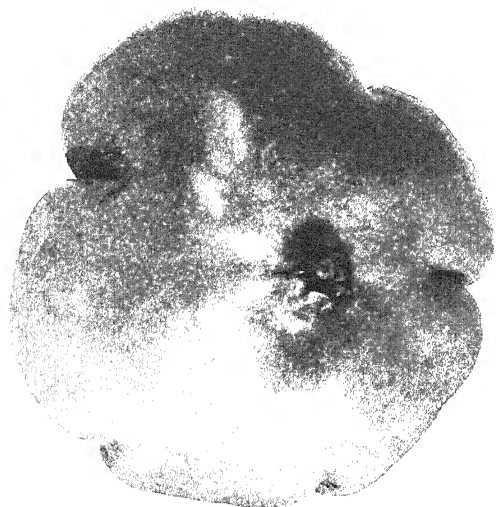
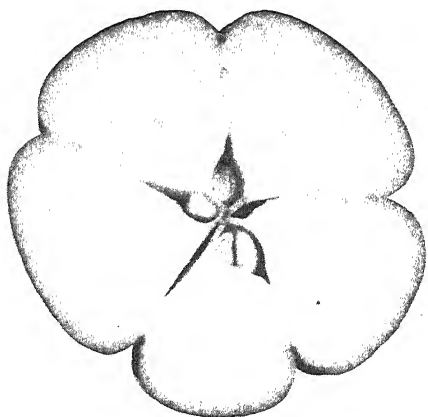
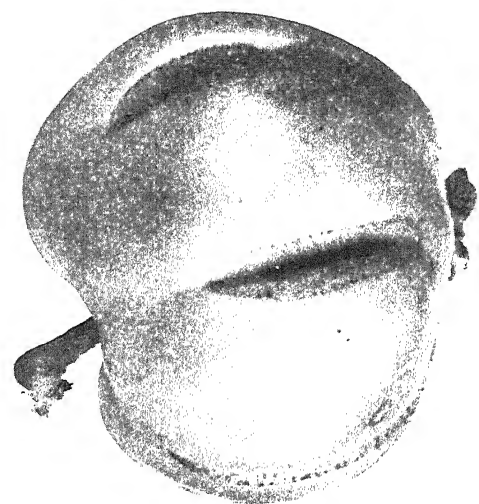


FIG. 122.—APPLES SHOWING DAMAGE BY FROST AT WISLEY, 1936.



FIG. 123. —*MECONOPSIS BETONICIFOLIA* FOUR YEARS OLD.  
(p. 446)

[*To Jussé p.* 433.

## HARDY BRITISH FERNS.

By W. LOGAN.

[Read September 1, 1936; Mr. AMOS PERRY, V.M.H., in the Chair.]

THE hardy British ferns have numerous and very enthusiastic lovers and admirers, and this is the more remarkable for they are flowerless plants, which deprives them of that variety of colour which flowering plants possess. Yet these multitudinous flowerless plants with their ever-fresh green, and the graceful outlines of their delicate plumose fronds, claim admiration and enjoy great popularity.

Their popularity is no doubt due to their hardiness and adaptability for planting in moist and shady London gardens, and some of the commonest species are of inestimable value to adorn those dismal and cheerless sunless parts of the garden where flowering plants fail.

It is to be regretted that the word "moist" is so often misinterpreted. Ferns are moisture-loving, but this does not mean that they should be drenched with water until the soil becomes a bog. Many failures are due to this misunderstanding of their requirements. Keep them moist, but take care that there is perfect drainage. Superfluous water becomes stagnant which tends to sour the soil, and the plants sicken and death will follow.

The most suitable spot for the construction of an open-air fernery is one with a broken and uneven surface, where there exists a certain amount of shade, protection from high winds and partial exposure to the sun. If there is a stream of water running through it so much the better, for it adds to the effect. The most sheltered spot available should be selected, with partial shade, but not under large trees, as the drip from them is ruinous to the general well-being of ferns. An elevated site is preferable, it ensures good drainage, and uneven surface affords greater diversity and admits of a more artistic planting arrangement than a flat surface. Mounds can be made to any height, the outline formed to any shape, and the less formality the greater will be the effect. To ensure good drainage the base of the mound should have rough stones, old bricks, or broken pots to carry away any superfluous moisture; over this the soil may be placed and held in position by rocks or burrs partially buried, and many unsightly corners may thus be converted into the most pleasing part of the garden. The best compost for the fern garden is a mixture of rough peat, loam, leaf-mould and coarse sand, in about equal parts. The lime-loving ferns must have a compost mixed with limestone, chalk, or old mortar rubble.

In planting the fernery due care must be taken to arrange the

plants according to their heights, for they are extremely varied in habit and size ; the taller species and varieties must be planted so that their fronds do not hide the dwarfer growing. When selecting kinds to grow care must be taken to have the evergreen and deciduous species so distributed that the whole may have a furnished and interesting appearance in both summer and winter.

There is not a garden, small or large, nor indeed any season, which they will not enrich by their grace and beauty.

In spring, what more charming than the unfurling of their fronds ; in summer, what more delightful than a shady glen or burn made tranquil by their cool and restful green ; and in autumn, what more beautiful than the bronze or russet tints which remain as companions to the fronds of the evergreen species in the winter months.

During the summer, in dry weather, the ferns must be well watered at the roots, but not dashed about unmercifully with water over the fronds. After weeding, in the autumn, a mulch of fine mould is better than forking between the plants.

The cultivation of hardy ferns in pots is gaining popularity ; they are invaluable for cold-house decoration. The size of the pots must be regulated according to circumstances. The soil for pot-cultivation is the same as has been recommended for outdoors, but not so coarse. When potting do not use too large a pot, and free drainage is essential. Hardy ferns are at rest in early autumn and continue so during the winter : they begin their new growth about April. Early March, or just before growth begins to show itself within the crown, is the best time to re-pot or top-dress them with new soil. If any plants require re-potting, turn them out, shaking away a little of the old soil, taking care not to damage the roots, re-crock and replace with fresh soil. If too large a pot is used, the soil is apt to become sour before the roots can occupy it.

*On sowing Fern spores.*—The raising of ferns from spores is one of the most interesting phases of gardening. It is quite simple, but requires care and patience in preparing the soil and pots before sowing. Well-washed pots must be used, and the soil must be thoroughly sterilized so as to destroy all animal and vegetable life contained in it, and prevent Confervae and mosses springing up, which would tend to destroy the young ferns in their prothalloid stage of growth. The most convenient size of pot to use is the 48. The pots must contain quite 2 or 3 inches of broken crock at the bottom and soil added to within 1 inch of the top, when boiling water must be passed through to cleanse it and destroy all weeds and the like in the soil. When the pots have thoroughly drained and the soil is cool, the spores may be sown as thinly as possible on the damp surface, covered with a piece of glass to prevent foreign spores being deposited on it, and placed in a shady part of the greenhouse in saucers of water and kept moderately moist until the spores have germinated. Do not water overhead. When the young fronds show, prick off into small patches and finally as single plants. The young prothalli must never become dry.



*Ferns for a damp sunny position.*

Dryopteris ( <i>Lastrea</i> )	Filix-mas	Barnesii.
"	"	" " cristata.
"	"	" " foliosa.
"	"	" " linearis.
"	"	" " polydactyla.
"	"	" " propinqua.
Polystichum	angulare.	
"	"	divisilobum.
"	"	" foliosum.
"	"	grandiceps.
"	"	laciniatum.
"	"	rotundatum.

*Ferns for a damp shady position.*

Athyrium	Filix-foemina	angustatum	cristatum.
"	"	"	" curtum.
"	"	"	foliosum.
"	"	"	percristatum.
"	"	"	pulcherrimum Barnesii.
Dryopteris	dilatata.		
"	japonica.		
"	Thelypteris.		
Osmunda	regalis.		
"	"	purpurascens.	
"	"	undulata.	

*Ferns for crevices of rocks or walls, mostly evergreen.*

Asplenium	Trichomanes.		
"	"	cristatum.	
Athyrium	Filix-foemina	congestum.	
"	"	"	" cristatum.
Cystopteris	alpina.		
"	fragilis.		
Dryopteris	alpina	polydactyla.	
"	Pseudomas	crispa.	
Polystichum	angulare	congestum.	
"	"	cristatum.	
Scolopendrium	Phyllitis	cristata.	
"	"	lacinata	multifida.

*Ferns for pot cultivation.*

*Adiantum pedatum.*

*Dryopteris erythrosora.*

„ *japonica.*

„ *Filix-mas cristata.*

„ *Pseudomas linearis.*

„ „ *polydactyla.*

*Osmunda palustris.*

„ *regalis cristata.*

*Polystichum angulare divisilobum.*

„ „ „ *densum.*

„ „ *cristatum.*

„ „ *foliosum.*

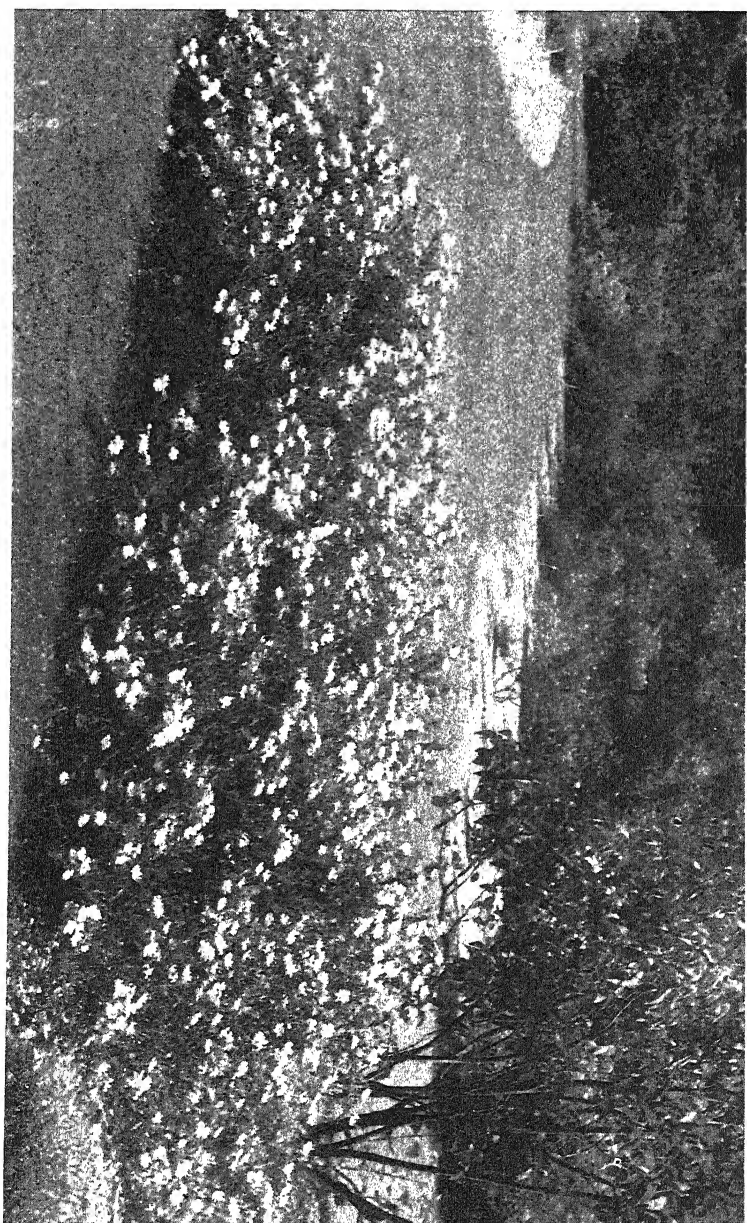


Fig. 124.—*Helianthemum formosum* var. *concolor* at Wisley.



FIG. 125.—ROOT-CUTTINGS OF BLACKBERRY.

[To face p. 437.

## PROPAGATION OF BLACKBERRIES.

By J. M. S. POTTER, N.D.H.

THE customary method of increasing Blackberries vegetatively is by layering the "tips" of the young canes in the autumn. The "tips" of the current season's growth are buried in the ground to a depth of a few inches, and made secure. By the following spring these "tips" will have formed sufficient roots to permit them to be severed from the parent plant, when they can be transplanted to the nursery.

By this method the number of new plants which can be obtained from an established plant directly depends on the number of new growths made that season, *i.e.* if a plant produces 12 canes, only 12 new plants can be obtained. Thus "tip" layering is satisfactory only where a small stock has to be raised.

With the object in view of trying to discover a more prolific method of increase, an experiment was carried out at Wisley to ascertain if Blackberries could be propagated by means of layers, ripe-wood cuttings, or root-cuttings. Two outstanding varieties in the trial, 'Bedford Giant' and 'John Innes,' were selected for test, and a number of layers, two hundred ripe-wood cuttings and an equal number of root-cuttings of each variety were prepared for propagation.

The method of serpentine layering was selected as the most suitable, and at the end of October canes of both varieties were laid down. In serpentine layering alternate lengths of the cane are buried, the remainder being above ground. The layers were prepared by notching every third node, the notched parts being securely pegged down into shallow trenches, and slightly covered. They were kept free from weeds during the winter and early spring, and at the end of May were lifted for examination. It was discovered that in most cases the two notches immediately behind the apex of the shoot had produced roots to form two new plants, but while the notches behind these had callused, no roots had been formed. It was possible that these callused portions might have formed roots, but as six months had elapsed since the shoots had been layered, it was considered this would not be a profitable method of increase. The fact that rooting took place towards the "tips" of these shoots suggests that unripe wood may be of more value and the possibility of striking soft-wooded cuttings is to be investigated later.

The ripe-wood cuttings were taken in November and each consisted of three nodes and two internodes. They were prepared from the base, centre, and tips of the current season's growths, to discover whether those taken from any particular region rooted better than others. They were inserted in nursery beds by running the cuttings 4 inches apart

in rows. A certain number were inserted the wrong way up to see if position influenced root-formation. The cuttings were firmed and the beds kept clean during the winter and following spring. By the end of April all cuttings with the exception of one 'Bedford Giant' had died, and it seems that this method is not suitable for increasing Blackberries.

Material for root-cuttings was obtained by carefully forking round one or two established plants, and selecting a few suitable roots. This was done during the second week in February, and the cuttings prepared by dividing the roots into pieces about 2 inches long. They were then placed flat on the bottom of shallow boxes, without soil, not covered with compost, and the boxes stood in a propagating house with a temperature varying between 55° and 60° F. The cuttings were kept moist by spraying overhead two or three times a day, and by shading with sheets of paper. After fourteen days had elapsed small adventitious buds began to develop along the whole length of the cuttings of 'John Innes.' The number of buds varied from one to five and they were produced more quickly on cuttings made from thin than from thick roots. After a month had elapsed all of the variety 'John Innes' had formed shoots, and where more than one had developed on a cutting only the strongest was left (fig. 125).

The young plants were then placed in boxes of sandy soil so that the shoot stood just above the surface. After this they were removed to a warm house until root activity had begun, when they were gradually hardened-off. The young plants made rapid growth during April and were fit for transplanting into the nursery by May.

Unfortunately the same success was not achieved with 'Bedford Giant,' for only 10 per cent. of the root-cuttings of this variety produced buds in the same manner as in 'John Innes.' The remainder formed a large callus at each end, but the usual method of inciting the callus into bud formation, by splitting with a knife, was without effect.

It is probable that an important factor contributing to the success of this method of propagation is the season at which it is carried out. Future experiments are to be carried out to determine this, and it is hoped to investigate the value of this method of propagation with other varieties of Blackberries.

## PLANTS TO WHICH AWARDS HAVE BEEN MADE IN 1936.

**\*Antirrhinum 'La Victoire.'** A.M. August 14, 1936. Raised and sent by Messrs. W. H. Simpson, Birmingham. Plant of erect bushy habit, compact, with a central flower spike followed later by numerous side spikes. Flowers large, rich salmon-terra-cotta, lip flushed yellowish-orange. A true even stock.

**\*Catananche caerulea major.** A.M. August 14, 1936. Raised and sent by Mr. Amos Perry, Enfield. Plant of erect habit, 2½ feet tall, free flowering. Flowers semi-double, 2 inches across, rich lavender-violet with deep violet centre.

**Dracocephalum Hemsleyanum.** P.C. August 18, 1936. From Mrs. J. Courtauld, Burton Park, Petworth, and W. Slade Mitford, Esq., River Cottage, Petworth. This is an herbaceous plant with almost a bushy habit, and is said to reach a height of three feet when seven or eight years old. It forms a number of flowering stems, carrying whorls of sapphire-blue flowers, nearly an inch in height. The throat of the tubular corolla is lighter in colour with deep spots. The plant is said to flower throughout the summer. A species recently sent home by Capt. Kingdon Ward (K.W. 11841).

**\*Erigeron glaucum 'Elstead Pink.'** H.C. August 14, 1936. Raised and sent by Mr. E. Ladhams, Elstead. Plant 9 inches tall, of compact habit, free and continuous flowering. Flowers single, 1½ inch diameter. rose-pink, disc yellow.

**Eucryphia cordifolia.** A.M. September 1, 1936. From Messrs. R. Gill & Son, Falmouth. This very fine evergreen species is, unfortunately, suitable only for the milder parts of the British Isles, where it forms a large, handsome bush. The branches are closely set with very leathery, elliptical leaves, dark and lustrous above and paler and downy beneath. The snow-white flowers arise singly from axillary buds and their purity is enhanced by the delicate coffee-coloured stamens.

**Eucryphia 'Rostrevor.'** A.M. September 1, 1936. From Lord Aberconway, Bodnant. A very attractive hybrid raised at Rostrevor between the Australian *Eucryphia Billardieri* and the Chilian *E. pinnatifolia*. It is a quick-growing and free-flowering evergreen shrub of very fastigiate habit, with slender, purplish branchlets bearing both simple and ternate leaves. Of the latter the leaflets are 1 to 2 inches long, narrowly elliptical and dark, glossy green. The fragrant white flowers have four rounded petals, numerous stamens and a central cluster of rose-tinted styles.

**Gentiana asclepiadea.** A.M. September 1, 1936. From Lady Leconfield, Cockermouth Castle, Cumberland. A very desirable

species for the wild garden or for a moist, shady border, where it will produce clusters of slender, arching stems 2 feet tall with spreading, ovate, pointed leaves and covered in the upper half of their length with sapphire, trumpet-shaped flowers of rich beauty.

**Gentiana saxosa.** A.M. August 5, 1936. From Mrs. Gwendolyn Anley, St. George's, Wych Hill Lane, Woking. This beautiful introduction from New Zealand is known as 'The Shore Gentian.' Its pure white flowers are borne on graceful, brown-tinged stalks rising  $1\frac{1}{2}$  to 2 inches above the close-growing, spatulate leaves, which are deep green, shining and up to  $1\frac{1}{2}$  inch in length.

\***Gladiolus 'Alraune.'** H.C. August 14, 1936. From Messrs. Konynenburg & Mark, Noordwyk, Holland. Large-flowered type. Flower stem  $4\frac{1}{2}$  feet tall; 16 to 18 flowers on a stem. Flowers soft salmon-carmine, tips and margin cerise, lower petals pale cream.

\***Gladiolus 'Aphrodite.'** A.M. August 14, 1936. From Messrs. Bath, Wisbech. Large-flowered type. Flower stem 5 feet tall; 14 to 16 flowers on a stem. Flowers bright rich salmon-pink having the lower petal blotched with cream and feathered with magenta.

\***Gladiolus 'C. P. van Tienhoven.'** A.M. August 14, 1936. From Messrs. Unwin, Histon. Large-flowered type. Flower stem 5 feet tall; 16 to 18 flowers on a stem. Flowers rich glowing salmon-cerise having the lower petal suffused scarlet.

\***Gladiolus 'Debonair.'** A.M. August 14, 1936. From Major Churcher, Lindfield. *Primulinus grandiflorus* type. Flower stem 5 feet tall; 16 to 18 flowers on a stem. Flowers soft cream-pink, margins of outer petals flaked pale carmine, lower petal suffused cream.

\***Gladiolus 'Gay Hussar.'** A.M. August 14, 1936. From Messrs. Velthuys, Hillegom, Holland. Large-flowered type. Flower stem  $4\frac{1}{2}$  feet tall; 16 to 18 flowers on a stem. Flowers bright rich salmon-orange, middle of lower petals primrose speckled scarlet.

\***Gladiolus 'Lady Winsome.'** H.C. August 14, 1936. From Mr. R. M. Palmer, Cobble Hill, British Columbia. Large-flowered type. Flower stem 5 feet tall; 20 flowers on a stem. Flowers soft clear cream-pink, lower petals suffused crimson at middle.

\***Gladiolus 'Louis d'Or.'** A.M. August 14, 1936. From Messrs. Konynenburg & Mark, Noordwyk, Holland. *Primulinus grandiflorus* type. Flower stem 4 feet tall; 12 to 14 flowers on a stem. Flowers rich old gold, middle of each petal narrowly lined scarlet.

\***Gladiolus 'Polar Ice.'** A.M. August 14, 1936. From Messrs. Konynenburg & Mark, Noordwyk, Holland. Large-flowered type. Flower stem  $4\frac{1}{2}$  feet tall; 20 flowers on a stem. Flowers pure white. Specially recommended for garden and market.

\***Gladiolus 'Queen Louise.'** A.M. August 14, 1936. From Messrs. Dobbie, Edinburgh; Messrs. Morris, Birmingham; Messrs. Pfitzer, Stuttgart. Large-flowered type. Flower stem  $3\frac{1}{2}$  feet tall; 20 flowers on a stem. Flowers white, lower lobe creamy-white.



\**Gladiolus* 'Salbach's Orchid.' A.M. August 14, 1936. From Mr. Carl Salbach, Oakland, California. Large-flowered type. Flower stem  $4\frac{1}{2}$  feet tall; 16 to 18 flowers on a stem. Flowers pale rose-pink, margins flaked with darker shade, middle of lower petals cream spotted rose-pink.

\**Gladiolus* 'Sonatine.' A.M. August 14, 1936. From Messrs. R. A. Morris, Birmingham. Large-flowered type. Flower stem 6 feet tall; 20 flowers on a stem. Flowers soft rose-pink, middle of lower lobes white speckled magenta.

\**Gypsophila paniculata* 'Rosenchleire' (syn. 'Rosy Veil'). A.M. August 14, 1936. From Mr. A. Perry, Enfield. Plant of compact bushy habit,  $1\frac{1}{2}$  foot tall, forming a graceful bush. Flowers double,  $\frac{1}{2}$  inch diameter, at first white, later rosy-pink. Ideal as a cut flower.

*Heliopsis scabra patula*. A.M. August 18, 1936. From Messrs. Wood, Taplow. This handsome hardy herbaceous plant was raised in France by Messrs. Lemoine. Its very attractive deep golden-yellow flowers with several rows of florets measure 5 inches across. They are borne on long stiff stems and are very suitable for cutting.

*Malus* 'Athabasca.' A.M. September 1, 1936. From Viscountess Byng of Vimy, Thorpe-le-Soken. A handsome seedling raised at Ottawa by Miss Preston. The spray exhibited bore many bright crimson-scarlet fruits, roundish-conical in shape with closed, raised eyes, and about 1 inch in length.

*Pentstemon cordifolius*. A.M. August 5, 1936. From Lady St. Cyres, Walhampton, Lymington. A shrub from California which, in the south, may be grown outside without protection. The flowers are  $1\frac{1}{2}$  inch long, bright scarlet, and with a pretty, pale green calyx. The glossy leaves are ovate, serrate, 1 inch long, borne on moderately strong growths.

*Pentstemon isophyllus*. A.M. September 1, 1936. From Mr. W. Wells, jun., Merstham. A useful herbaceous species with tall stems, furnished with pairs of neat, oblong-ovate leaves and bearing narrow terminal panicles of tubular, salmon-rose flowers.

*Punica Granatum* var. *nana*. A.M. August 18, 1936. From Messrs. Sutton, Reading. This miniature pomegranate closely resembles the type, but its stems, leaves and flowers are proportionately reduced in size. It is of a compact habit, and its orange-scarlet flowers are freely formed. It is said to come true from seed, and flowers in three to four years. It requires cool-house treatment.

Rose 'Beverley Nichols.' A.M. August 5, 1936. From the Burbage Nurseries, nr. Hinckley. A creamy-apricot Hybrid Tea variety shaded with rosy-blush on the outer side of the petals. The blooms are of good form and substance. The variety is the result of a cross between 'Mme. Abel Chatenay' and 'League of Nations.'

**Smilax biflora.** A.M. September 1, 1936. From Mrs. Gwendolyn Anley, Woking. A dwarf Japanese shrub suitable for the alpine house, forming a dense thicket 4 to 5 inches high of stiff, zigzag growths bearing small, ovate or orbicular light green leaves. The specimen exhibited was stated to have been growing for eleven years in a lump of lava from Fuji-yama.

**Solidago 'Leraft.'** A.M. August 18, 1936. From Miss A. Walkden, The Raft, Sale, Cheshire. A very free-flowering, vigorous hardy herbaceous plant with dark substantial foliage and long graceful much-branched plumes bearing myriads of bright yellow flowers. It first flowered among some seedlings from a plant of *Solidago* 'Lemosa' on which pollen from *S. missouriensis* was used. Height 3½ feet. Season mid-August.

**\*Tradescantia 'Blue Stone.'** A.M. July 16, 1936. From Messrs. Prichard, Christchurch. Plant 15 inches tall, bushy and compact, free branching. Flowers 2 inches diameter, bright Reckitt's blue.

\* After trial at Wisley.

## THE AWARD OF GARDEN MERIT.—XXXVII.\*

By F. J. CHITTENDEN, F.L.S., V.M.H.

## 212. LONICERA TRAGOPHYLLA.

*Award of Garden Merit, July 2, 1928.*

The twining species of *Lonicera* share with *Clematis* and *Rosa* the first place among climbers hardy in the British Isles. These Honey-suckles include both evergreen and deciduous species, *Lonicera tragophylla* being one of the latter. It is distinguished among the group to which it belongs by the large size of its bright yellow flowers, often well over 3 inches long and an inch across, which are grouped in clusters of ten to twenty at the ends of the branches. The pair of leaves below the cluster are completely united by their bases as in *L. Caprifolium*, the pair next below joined but less completely and those lower down shortly stalked. They are from 2 to 4 inches long and nearly half as wide, entire, and rather greyish-green. The flowers are followed by bright red berries.

Like all its relations this grows best in a deep moist loam and is excellent on a pergola or scrambling over a hedge or low tree. The only pruning it needs is the restriction of branches straggling beyond their allotted space. It is a native of Hupeh whence it was introduced to Messrs. Veitch's Coombe Wood nursery in the early part of the present century. It is figured in the *Botanical Magazine* on t. 8064.

## 213. RUDBECKIA SPECIOSA.

*Award of Garden Merit, August 8, 1933.*

The *Rudbeckias* form a group of herbaceous North American plants allied to *Helianthus* in the flower heads of which the centre is occupied by a flat disc, and *Helenium* in which the disc is almost spherical, while in *Rudbeckia* it is conical, or even columnar. Some of the species are somewhat coarse but *Rudbeckia speciosa* (sometimes called *R. Newmannii*) is a fine summer-flowering perennial for the herbaceous border, growing between 2 and 3 feet in height. The lower leaves are stalked, ovate, with well-marked veins and coarse teeth, becoming gradually narrower and with shorter stalks up the well-branched stems

\* The notes on the first hundred plants to receive the Award of Garden Merit have been collected from our JOURNAL, vols. 47 to 53, and published as a pamphlet, price 1s. For subsequent notes see vol. 54, pp. 218 and 423; 55, pp. 121 and 276; 56, pp. 80 and 245; 57, pp. 65 and 354; 58, pp. 171 and 400; 59, pp. 131, 308, 360, 406 and 449; 60, pp. 89 and 545; and 61, pp. 94, 138, 225, 265, 298, 358 and 393.

until the uppermost are sessile. The flower heads are orange-rayed with a deep purple disc and measure  $2\frac{1}{2}$  to 4 inches across.

Like others of its genus this gives good results only when the soil is thoroughly prepared and either naturally moist or kept so by good mulches. Perhaps a word of warning against the use of undiluted lawn mowings as a mulch may not be amiss here. In wet weather such a mulch goes down to a wet mass forming not a mulch but a plaster which excludes air and quickly causes the plant around which it is placed to suffer. Mulches should be loose so that air can pass freely through them and the soil easily rid itself of the carbonic acid which an active root produces and take in the oxygen which the root requires.

#### 214. GERANIUM WALLICHIANUM, BUXTON'S VARIETY.

*Award of Garden Merit, September 26, 1929.*

The genus *Geranium* is a large one, with about 250 species scattered through the temperate regions of the world, mainly in the northern hemisphere, or if in the tropics then found only on high mountain ranges. Many of the species are annuals, some herbaceous perennials, a very few somewhat shrubby.

Of this great number, nearly all hardy in this country, only a few have found a welcome in our gardens, partly because so many are annuals, many have small flowers, and some with larger flowers are so soon overpowered by their abundant fruits that they become somewhat unsightly.

*Geranium Wallichianum* suffers from none of these drawbacks, and into the bargain, in the best form, that to which the Award has been made, it has flowers so nearly blue that it needs none of the catalogue-maker's licence to call them so, Buxton's variety being the bluest. It grows to about 18 inches in height and flowers from June to October. The soil should be a moist, well-drained loam containing sufficient sand to keep it open and a considerable amount of leaf mould.

The following characters in addition to the large flowers about an inch across, blue with deeper blue veining, will serve to distinguish this from nearly related perennial species. The leaves are angular in outline, three- to five-partite with more or less rhomoid ovate lobes, and their stipules are broadly ovate and joined; the stems, several of which spring from the base of the plant, are hairy but not glandular in their upper part; the flowers are borne in pairs and the unstalked petals are about double the length of the spreading sepals.

*G. Wallichianum* is a native of the North-eastern Himalaya and was introduced to British gardens in 1820. It is figured in the Botanical Magazine, t. 2377, and in Sweet's Geraniaceae, t. 90.

## GARDEN NOTES.

*Euphorbia Lathyris*.—Among the plants sent to us for information or identification *Euphorbia Lathyris* is one of the most frequent during the summer months. This is due partly, no doubt, to the singularity of its appearance, partly to the habit which it shares with the Henbane and the Thorn Apple of appearing in gardens where it has never been purposely sown and where it has not previously been seen, and partly because it is known by the name of Caper Spurge or even Wild Caper Plant. The last reason and traditional practice often prompt the question, When should the capers be picked and how should they be pickled?

The proper answer is, They should never be pickled and there is no need to pick them.

The facts are that the green fruits have sometimes been pickled and presumably used in place of capers, but it is very doubtful whether even the steeping in salt and water and in vinegar which they undergo in the process of pickling renders them completely innocuous though it does no doubt mitigate their extreme poisonous properties, and probably the dilution with other pickles makes them less liable to do harm, but the plant and its fruit are so poisonous that they are better left alone entirely.

The milky juice which characterizes the species of *Euphorbia* or Spurge is very acrid and the seeds contain a violently purgative oil. It bears no relationship to the true Caper (*Capparis spinosa*) which is a plant difficult to grow in England, though a native of the Mediterranean region, the Capers of commerce being the pickled flower-buds, and if one desires to use English-grown products as a substitute we have the half-ripe seeds of the common *Tropaeolum majus* which are completely innocuous.

*Arundinaria nitida* (fig. 107).—It will be a sad day when this species takes upon itself to flower, for it is one of the most graceful of the hardier Bamboos, and has the additional merit of growing compactly and not straggling about in invasive fashion. The illustration—from a photograph taken while it is still in beauty—shows a clump 17 feet high and 8½ feet round the circle of the bending culms, aptly described as giant “feather-boas.”

*Phyllostachys nigra*, which flowered five or six years ago, did not set seed here, and for the two following years put out a few green leaves as if it were going to recover, but now is as bare again as a schoolmaster's cane, as also is a form of *P. aurea* which flowered last year. May it be long before a *nitida* follows suit!—C. Scrase-Dickins, Coolhurst.

*Frost Damage to Apples.*—A peculiar form of damage to apples due to frost at Wisley is shown in fig. 122. A sharp frost occurred soon after the apples had begun to swell, and this injured the tissues near the outer ring of vascular bundles in the young fruits. Ten vascular bundles are easily discernible in the apple fruits, one opposite each of the cells and a second set alternating with these, those opposite the cells being nearer the surface than the others. It was the vascular system opposite the cells that was affected, and the consequence was the failure of the tissues there to develop normally, so that five grooves looking almost like cracks were produced. The fruits illustrated were picked at the beginning of August. This type of damage is not very frequent, but has occurred before at Wisley, and no doubt the exact degree of injury to the vascular system determines whether the fruit shall develop at all, or develop only in this peculiar fashion. Injury of perhaps only slightly greater intensity led to the dropping of much partially developed fruit in June. Examination of these fallen fruits from many localities showed more or less browning of the vascular tissue in a large proportion.

*Meconopsis betonicifolia.*—The duration of plants of *Meconopsis betonicifolia* is sometimes questioned, and it seems possible that there are distinct races, some biennial, some perennial. That perennial plants exist and thrive is amply demonstrated by those shown in fig. 123, made from a photograph kindly sent by Mrs. J. RAYMOND LITTLE, taken in her garden at The Common, Windermere, Westmorland. These plants are flowering for the third or fourth time. Mrs. LITTLE's practice is to sow the seed as soon as it is ripe. The plants showing the best blue are alone suffered to survive, and the seed-pods are picked off these (save those needed to supply the seed to be sown each year) as the flowers go over. No doubt the prevention of seeding is a factor leading to the survival of the plants.

## BOOK REVIEWS.

"Veksthus og benker" (Greenhouses and frames). By Arne Thorud. 8vo 159 pp. (Oslo, 1936.)

The book begins with an historical account of the efforts to grow plants in colder climates than their natural surroundings. These efforts go back to the time of the Romans who cultivated vines in the northern parts of their empire by using houses heated by the outflow of their hot baths. Columella in the reign of Tiberius gave an account of the best procedure for this purpose. The first actual greenhouse constructed for horticultural purposes was erected in Heidelberg in 1619, to be followed in 1684 by the erection of a greenhouse in the Physic Garden in Chelsea. These earlier plant houses had the usual slate roofs, and it was not until 1717 that glass was used for roofing purposes. The evolution of the modern greenhouse from these primitive beginnings is full of interest, and representations of many of the notable buildings such as the palm house in Kew Gardens and the Crystal Palace are given, culminating in the large cubist erection exhibited at the International Exhibition in Antwerp in 1931.

In addition to houses suitable for botanic gardens the author deals with those required for commercial purposes. Details are given of their construction with such modifications as are appropriate for special crops. The advantages of different types of houses are discussed from the point of view of economical heating, and a table sets forth all the quantities of fuel required for heating in summer and winter at different latitudes in Norway. In connexion with the latter, the tables giving the amount of light available are important, as this factor has to be taken into special account at high northern latitudes. A discussion of various kinds of glass deals both with the amount of light they let through, according to the most recent researches, and also with their cost.

Indeed the whole book deals both with efficiency and economy in the construction of greenhouses, as can be seen from the chapters dealing with various types of furnaces, with the relative advantages of coke furnaces and steam heating, the possibility of using cheap electricity produced by water-power for heating or the use of oil.

Having dealt with the houses the author discusses various types of frames, and indicates how they can be treated by hot pipes or electricity. The whole treatment shows that the author is very much up to date with the progress made in his own and in other countries with regard to greenhouses and frames, and the bibliography given at the end of the book shows that he has read widely the relevant literature on the subject. It would be an advantage to horticulture in this country if a similarly well-illustrated and up-to-date book were available for British growers of greenhouse plants.

F. E. WEISS.

"Town Garden Problems Solved." By H. A. Day. 8vo. 64 pp. (Link House, London [1936].) Paper cover, 1s. 6d.

The endeavour to solve the problems met with by others in gardening is a worthy one, and here we have an attempt. It is, of course, useful in so far as the right answer to the questions put is given, but in many cases we fear the best solution of the problem set has not been found—in some indeed the core of the question has apparently not been discovered by the author of the reply.

Much useful information is, however, given, which those who have had some experience could select from the rest.

"Gardens and Gardening, 1936." Ed. by F. A. Mercer. 4to. 126 pp. (Studio, London, 1936.) 10s. 6d.

As usual in this publication pictures of gardens and of garden plants constitute the main feature. This year there are such illustrations in black and white, and a few in colour, from gardens both of America and Great Britain and an odd one or two from the Continent. The notes on many of these have been written by Capt. R. H. B. Symons-Jeune. An excellent account of the rise and popularity of the modern Dahlia appears from Mr. D. B. Crane and an informative article

on the place of American herbaceous plants in the garden from the late Mr. Clarence Fowler.

Japanese miniature trees are dealt with by Miss E. Vernon, and the choice and grouping of Summer Flowers by Mr. Clarence Elliott.

Most of the illustrations are excellent, but a few need more than a cursory glance to enable one to recognize the plants the photographer has set out to portray.

"The Junior Gardener." By Harriet Price. Ed. by W. P. Wright. 8vo. xii + 134 pp. (Dent, London, 1936.) 5s.

Written in simple language for young readers, and full of sound advice, this book goes sometimes beyond what might be expected in a book with such a title. Birds, frogs and other animals of the garden are referred to at some length. The only adverse criticism we have to make is that the really ignorant might suppose that the abbreviation "pt." in the list of seeds required meant "pint"—it really means "packet."



# JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

Vol. LXI



Part II

November 1936

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## LILACS.

By H. G. HILLIER.

[Read September 15, 1936; Mr. C. H. CURTIS, F.L.S., V.M.H., in the Chair.]

I WAS asked to speak about Lilacs, and I do not know whether it was originally intended that my subject should be confined to that wide range of garden varieties of *Syringa vulgaris*, generally termed "Lilacs," or whether it was meant that this talk should include some of the other species of *Syringa*. In accepting the invitation, I preferred not to ask for any more precise details as to the scope of this paper but to accept the title to include some Lilac species, their varieties, and hybrids.

In passing it should perhaps be said that many people cause confusion by giving the name "*Syringa*" to members of the genus *Philadelphus*, a better popular name for which is "Mock Orange," and it should be understood that the name "Californian Lilac," popular in some quarters, refers to *Ceanothus*.

## DISTRIBUTION.

McKELVEY, in her wonderful detailed monograph on the Lilac published in 1928, recognized twenty-eight species, and so far as I am aware, there have been no additions since that time.

There are no Lilacs native in the continent of America, and with two exceptions they are confined to Asia. Only *Syringa vulgaris* and *S. josikaea* are native to central and south-eastern Europe.

It is not known when the common Lilac was first introduced into cultivation, but records show that it was known as early as 1563, and

by 1629 both the white and coloured forms were growing in England, though, strange to say, its native haunts were not definitely ascertained until 1828, and it was as recently as 1905 that wild seed was sent from Bulgaria to VILMORIN of Paris, who shared the seeds with the Arnold Arboretum.

Most species of *Syringa* are reported to be of fairly local distribution. *S. Fauriei* is stated to be confined to the Diamond Mountains in north-eastern Korea, and, according to E. H. WILSON, was not in cultivation in 1928; as the name appears in the Kew Hand-list, I asked the curator for a specimen, which he kindly posted to me, but I think without much doubt that the plant sent to Kew under this name is referable to another species.

A species with a very wide distribution is *S. amurensis*, which occurs scattered in Korea and the region bordering the Amur river. It is best known in cultivation in this country by its tree-like form from Japan, which is distinguished as variety *japonica*.

A Lilac with its background shrouded in mystery is the so-called Persian Lilac, which for more than 200 years was regarded as a native of Persia. It was as recently as 1915 that its true home in Kansu was discovered. As WILSON points out, "it is interesting to note that the region is transversed by one of the two great highways which the ancients used to journey across the heart of Asia. It was over this road that merchandize to and from Persia was carried in the earliest days: it was over this road that the Walnut, Grapevine and Muskmelon were brought into China: it was over this same road that the Peach and the Apricot, with silk, musk and Rhubarb, were carried to Persia and the shores of the Caspian Sea." It is now naturalized on the hill-slopes in Persia, but no botanist has found it wild in that land.

A similar geographical misnomer occurs in the name *Prunus persica*, the type of our edible Peaches, and yet another is *Syringa chinensis*.

Of the remaining species, fourteen are indigenous to western China, which may be looked upon as the home of the genus.

#### CULTIVATION.

Lilacs are deservedly among the most popular of garden shrubs. This popularity has been gained by the conspicuous flowers of the garden varieties of *S. vulgaris*, and also by their adaptability and the ease with which they may be cultivated. In these days of speed and mass production, it may be said the garden Lilac gives a conspicuous display in a comparatively short time.

I know of no soil which can be regarded as possessing any small degree of fertility in which Lilacs may not be successfully cultivated. They thrive in lime-saturated soils, and yet may be well grown in soils devoid of free lime. On the latter class of soils occasional dressings of bone meal are very desirable.

The two most important factors for successful cultivation are (1) a

position open to the sun, and (2) correct physical condition of the soil. In the first place, a sunny position is necessary in order to ripen the growths and produce flower buds: at the same time, one would not choose a dry, parched position open to the blazing sun without the slightest protection, since few flowers fade more quickly if exposed to intense light: merely for wood growth even a sunlit position is not all important, as is evidenced by vigorous growing bushes which may be noticed in the most uncharitable corners of our town and city gardens. Sufficient sun and rain during June is needful if we are to be favoured with a good Lilac season the following year. The second essential is the correct physical condition of the soil. Like the majority of plants, Lilacs need a moist but well-drained soil which at no season of the year becomes water-logged: they are comparatively shallow-rooted shrubs, and when grown on light sandy soils are among the first to show signs of wilting during drought; such a condition should be corrected by liberal dressings of decayed farmyard manure, or the addition of any other ingredient which would enrich the humus in the soil, and so increase water retention. One reason why Lilacs thrive on soils overlying chalk is the water-retentive quality of the chalk. During the prolonged drought of 1921 there were heavy losses throughout the country of newly-transplanted trees and shrubs: at that time we had reason to excavate on a piece of sloping down-land, situated on the west hill outside Winchester at 475 ft. above sea-level; like most of our land, it is comprised of 9 inches of stony loam over solid chalk: it may seem scarcely credible, but at two to three feet deep the moisture could be literally squeezed from the chalk. I suggest that this reserve of moisture near the surface of the soil is of more value to shallow-rooting shrubs such as Lilacs than the actual abundance of free lime in the soil.

Lt.-Colonel HENEAGE, hearing I was to speak on this subject, kindly invited me to see his wonderful collection of Lilacs at Coker Court. I had a delightful afternoon at the end of May wandering among his two hundred different varieties of garden Lilacs and discussing them with him: I imagine it to be the best collection in the country. He was very emphatic about the desirability of a certain amount of shade, and said "Lilacs need not have fourteen hours of June sunshine: six hours is long enough."

On vigorously growing established plants, annual pruning is generally necessary. This should be carried out immediately after flowering. Quoting Colonel HENEAGE once again, he said he aims at what a gardener would call a good apple tree: in other words, a well-shaped shrub with no over-crowding of branches and from which weak and over-rank growths are removed, so that the branch system is open to the ripening influence of the sun: it is, of course, understood that when this summer pruning is carried out all dead flower spikes are removed, and care should be taken to cut these shoots back to the first well-developed wood bud. This all tends to encourage the size and quality of next year's blossoms.

After some eight or ten years of such pruning the bushes may become sparse of branches and what a gardener would describe as "thin and leggy." If this condition should arise, drastic pruning is necessary, and this must be carried out in the dormant season, preferably in the autumn as soon as the leaves have fallen, when the shrub may be sawn down to within two or three feet of the ground. The same treatment must also be given to shrubs which have become overgrown and mis-shapen through neglect. After hard pruning a healthy shrub will respond vigorously, but there will be no flowers until the second season following the pruning, so that rather than miss a year's blossoms entirely it would be possible to carry out severe pruning over a course of two or even more years. Most Lilacs grown in natural bush shape will be found to have not less than three to five primary branches, so that instead of removing all of these in one year it would be possible by careful selection to cut back one or two only each autumn and still leave the bush reasonably shaped throughout the transition stage.

Whenever one is carrying out pruning on Lilacs it is well to remember that by the time the flowers are over the elongation of the wood on normal flower-bearing branches is approximately complete, and the next season's flower buds, although not mature, are in embryo form. That means if one shortened back the current season's shoots after flowering, or left pruning until the winter, the following year's flowers are lost.

The Lilac is not seriously affected by natural enemies. I can only recall one occasion when I saw Lilacs severely attacked by a parasitic pest: it was in a group of *S. reflexa* that I found many of the main branches thickly clad with scale, which I took to be that known as the "Oyster-shell Scale." Scrubbing the stems when dormant proved to be an effective remedy.

#### PROPAGATION.

The species may be increased by seed, but great care must be taken to make sure that the seed is pure, and not the product of cross-pollination: even then, since in a number of species there is considerable variation in shade of colour within the species this method cannot be employed to produce with certainty the best coloured forms.

After excluding the garden varieties of *S. vulgaris*, I have no hesitation in saying that with a few possible exceptions all the species of Lilac may be easily rooted from hard wood cuttings inserted in an open sand-bed during January and February: some authorities recommend September, with the object of a callus being formed before the "dead" season, but in the event of a cold wet winter the cuttings are liable to rot before the possibility of roots being formed in the spring. This year at Winchester we put in hard-wood cuttings, resulting in a seventy-five to ninety-five per cent. success, using the following sorts:—



FIG. 126.—SYRINGA 'MME. ANTOINE BUCHNER.'



FIG. 127.—SYRINGA 'PRESIDENT LOUBET.'

- Syringa chinensis* and its varieties  
„ *persica* and its varieties  
„ *reflexa*  
„ *Sweginzowii*  
„ *tomentella*  
„ *villosa* and its varieties  
„ *Wolfii*  
„ *yunnanensis*.

The same method employed for *S. vulgaris* varieties has not met with anything like the same success. The percentage rooted is very small, and although it is quite possible to propagate in this way, so far as we have found it is not a method which has any value for commercial purposes. Of the several sorts we experimented with a few years ago, the best results were achieved in the variety 'Madame Francisque Morel,' but this may have been merely a coincidence.

Soft-wooded cuttings give another possible method of propagation, and good results may be expected from most of the species. The garden varieties are not easy to propagate by this method, but if care is taken to secure the ideal conditions a reasonably good percentage of cuttings may be struck, and it is a method which, as a rule, recommends itself to private or botanical gardens where a few plants only of each variety are required. Even so, it is a matter of from four to six years before these tiny cuttings make what may be termed strong plants, so that from a commercial standpoint the uncertainty of success on a large scale, combined with the time required to make a saleable plant, renders this method unpractical.

Success in rooting soft-wooded cuttings is largely dependent upon selection at the exact time, to within a few days, at which the growths are in condition. They must be neither too soft nor too firm: a week too early or too late may mean the difference between success and failure. The usual time in normal seasons is early May, just as the first lateral growths are about 4 inches long and slightly firming and before they become hardened and any obvious pith is formed.

It is clear that young growths in this soft condition must be handled quickly, so that the time between the taking of the cuttings from the mother plant and their insertion should be as short as possible, and in order to ensure that they do not become dry, a damp cloth or box containing damp moss makes quite a good receptacle in which to gather the cuttings. They should be inserted in sand in close frames with gentle bottom heat, and as soon as rooted should be potted off into 3-in. pots.

A less precarious method than soft-wooded cuttings is to take half-ripened growths with a very slight heel. These should be taken in June and are best put in damp sand under bell-glasses.

For obtaining plants on their own roots undoubtedly the most practical method is by layering. For this method own root plants must be chosen, preferably those with a number of branches arising

from the ground level. These should be planted in the autumn, widely spaced, pruned back within a few inches of ground level the autumn after planting, and the young suckering growths which will be thrown up the ensuing summer pegged down and earthed up. From this time it will then require eighteen months before the first layered plants can be severed from the mother stool, but these will develop into reasonably large bushes within two years. It is due to the length of time required for propagation that there is always a lapse of a number of years between the introduction of a new variety and its availability in quantity on its own roots.

From the nurseryman's point of view, one drawback to this means of propagation is the considerable area of land which is required to accommodate the mother plants, together with the time taken in forming well-developed stool beds.

The commercial method of propagation in this country has been by grafting or budding low down on *S. vulgaris* as the root stock, and by this means it has been possible to distribute at very reasonable prices enormous quantities of the attractive garden varieties and so make these beautiful shrubs one of the most popular members of our English gardens.

According to American writers, nurserymen in the United States usually use *Ligustrum ovalifolium*, or other Privet, as an under-stock. This in England is an almost unpardonable offence, but the theory expounded in America is that Lilacs should be grafted very low down or on pieces of root of Privet with which the scions quickly unite; these are planted out for two years, the union being not less than 5 inches below the surface of the soil; at the end of two years the plants are lifted, by which time it is stated that the majority of the plants have grown out on their own roots, and before re-planting the Privet root is entirely removed. So far as I am aware there is no English nurseryman who has put this method seriously to the test. The only plants which I have seen budded or grafted on Privet have been rather miserable specimens: an unsightly swelling is usually formed at the point of union between stock and scion, since the under-stock does not thicken so rapidly as the Lilac. Privet has a somewhat dwarfing and rather deteriorating effect upon the Lilac.

When it is necessary to propagate standard Lilacs by grafting, *S. vulgaris* and not Privet should certainly be used. The only drawback to using *S. vulgaris* as an under-stock is its readiness to throw up suckers, which if not removed become difficult to distinguish from the variety in question.

In certain countries (such as Canada) which are subject to low winter temperatures other under-stocks have been used, including *Ligustrum vulgare*, the Amur Privet, and certain species of *Fraxinus*.

#### THE COMMON LILAC.

*Syringa vulgaris*, the type of all our garden varieties, in both its mauve- and white-flowered forms has now become so associated with



our landscape that many people think it is a native. As previously stated, it was introduced to this country over three hundred years ago, and is one of the most adaptable of shrubs in cultivation: allowed to grow unchecked it usually forms a large suckering bush to about 15 feet high—occasionally attaining small tree size. I can think of no other species of shrub which has given our gardens such a wealth of variety: erroneously these varieties are often referred to as garden hybrids, whereas actually they are all variations within the species, though usually the result of cross-pollination between two colour forms.

As in the case of every other plant which has become the plaything of the hybridist, the number of varieties has been increased beyond all reasonable limits: there are, in fact, more than five hundred described sorts. These varieties are composed of every conceivable degree of shade between red and blue, and yet no one variety can be described as a pure self red or pure self blue.

All the garden Lilacs are fragrant, but few of the modern varieties can compare in this respect with the common mauve type.

Of the improved sorts perhaps 'Katherine Havemeyer' is the most strongly scented. As a rule the white varieties are not so fragrant as the coloured forms.

The flowering season of the garden Lilacs begins with the 'Hyacinthiflora' group during the latter part of April and finishes with 'Paul Thirion' and the other late varieties of *S. vulgaris* in the early part of June.

England, I think it may fairly be said, leads the world in horticultural enthusiasm, as is evidenced by the existence of this great and ever-increasing Society, but we definitely lagged behind in the development of the Lilac. France has produced more varieties than any other country, though Germany, Holland, Belgium, and recently the United States and Canada have all helped to furnish our gardens with the improved varieties which we know to-day.

The house of LEMOINE of Nancy stands out pre-eminently as the greatest raiser of garden Lilacs. In 1876 VICTOR LEMOINE distributed two seedling Lilacs, which he named 'Gloire de Lorraine' (lilac-purple) and 'Jacques Callot' (purplish-lilac fading lilac-pink), both single varieties. These were followed two or three years later by the two double varieties 'Hyacinthiflora' (lavender-mauve) and *Lemoinei flore pleno* (lilac-pink). These have all been superseded by that wealth of new and improved varieties which continue to be put into cultivation by the firm of LEMOINE.

VICTOR LEMOINE was assisted by his wife, and latterly by his son and successor EMILE LEMOINE, and it is to these three people that we are indebted for most of our best garden varieties.

Another Frenchman who produced some good varieties as long ago as the end of the last century was MOREL. In 1892 he sent out the variety 'Madame Francisque Morel' (reddish lilac-purple passing to lilac-pink), which to this day remains among the élite, and when exhibited at a Chelsea Flower Show is as much in demand as any of the newer varieties.

STEPMAN DE MESSEMAEKER of Brussels is another name which should not be omitted from the list of important raisers of Lilacs. To him we are indebted for the variety 'M. Leon Mathieu' (single violet-blue to purple) and 'Madame Florent Stepman': the latter is among the best of the white varieties: it was introduced in 1908, and one of its parents is the well-known 'Marie Legraye,' which is still the most extensively grown white Lilac for forcing.

In the United States JOHN DUNBAR of Rochester is a name intimately connected with Lilacs. It is to him we owe the variety 'President Lincoln,' which when distributed in 1918 he described as the deepest blue known among Lilacs.

Yet another name which cannot be separated from the evolution of the garden Lilac is BALTET, a French nurseryman, who originated the pink variety 'Lucie Baltet' in 1882. Messrs. LEMOINE in 1919 presumably paid honour to the same family when they introduced the variety 'Capitaine Baltet,' which has large panicles of purple-lilac flowers.

For the sake of convenience I am giving a list of two dozen first-class varieties, and among these I think most Lilac enthusiasts would agree I have included the ten best, though opinions would vary in choosing these ten: further, I realize that in including any one variety I have necessarily excluded others which some may consider as good. One difficulty in trying to describe accurately the colour of a Lilac is the variation in shade from the time the buds expand until the blossoms fade: the colour is scarcely the same on two succeeding days. Then again, people's ideas of colour vary so much that the notes I have given can only be taken as an approximate guide to indicate whether red or blue is the dominant colour.

My list is as follows:

'Belle de Nancy': a very beautiful double Lilac, purple-red in bud, when fully expanded a decided shade of pink.

'Capitaine Baltet': as before mentioned, one of LEMOINE's excellent introductions. Red to purple-lilac, single.

'Edith Cavell': introduced in 1916. Distinctly cream in bud, opening pure white, double.

'Edouard André': carmine in bud, this may perhaps be described among doubles as the nearest to true pink.

'Emile Gentil': a remarkable shade of colour, perhaps the nearest approach to cobalt-blue, double.

'Etna': claret in bud, but when fully open among the best of the single pinks.

'Katherine Havemeyer': broad, compact, pyramidal clusters of double flowers, purplish-lavender fading to pale lilac-pink.

'Laplace': single rich dark purple is the general effect of this Lilac.

'Andenken an Ludwig Spaeth' ('Souvenir de Louis Spaeth'): a good all-round variety, and the most popular of the dark single red Lilacs. This variety is generally available on its own roots.

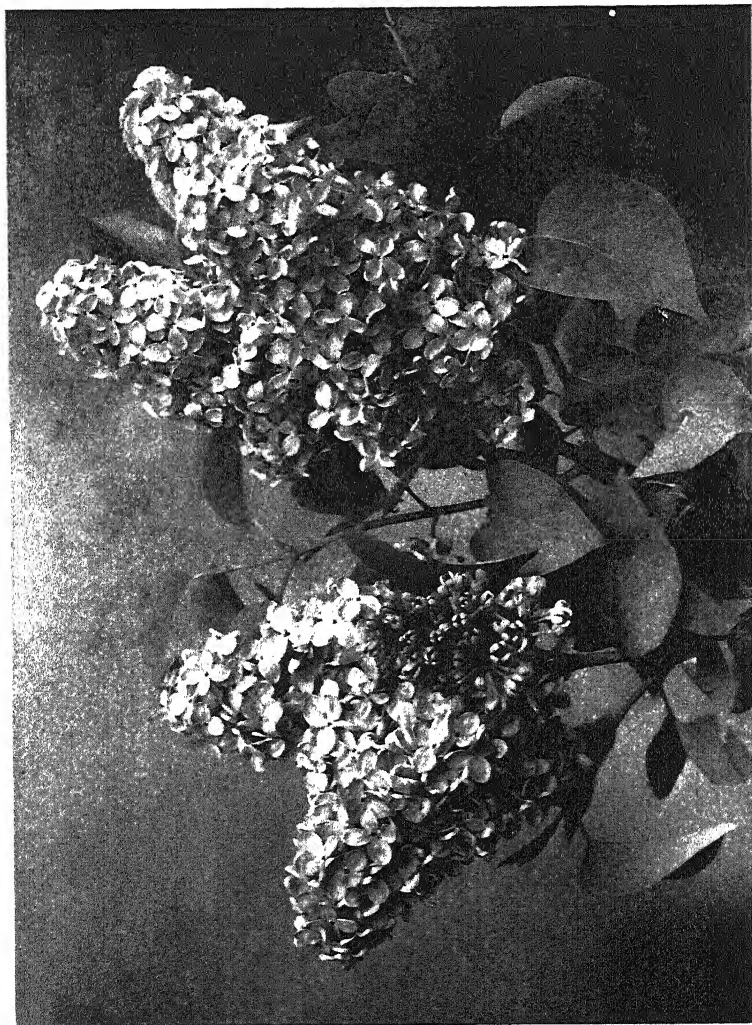


FIG. 138.—SYRINGA 'RÉAUMUR.'

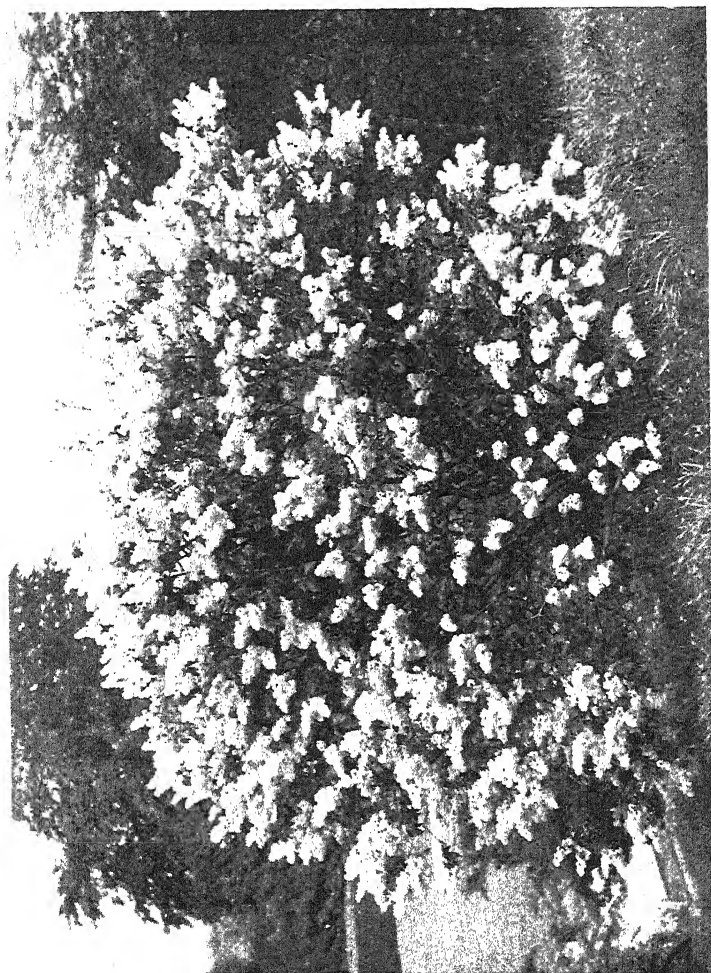


FIG. 129.—SYRINGA 'VESTALE.'

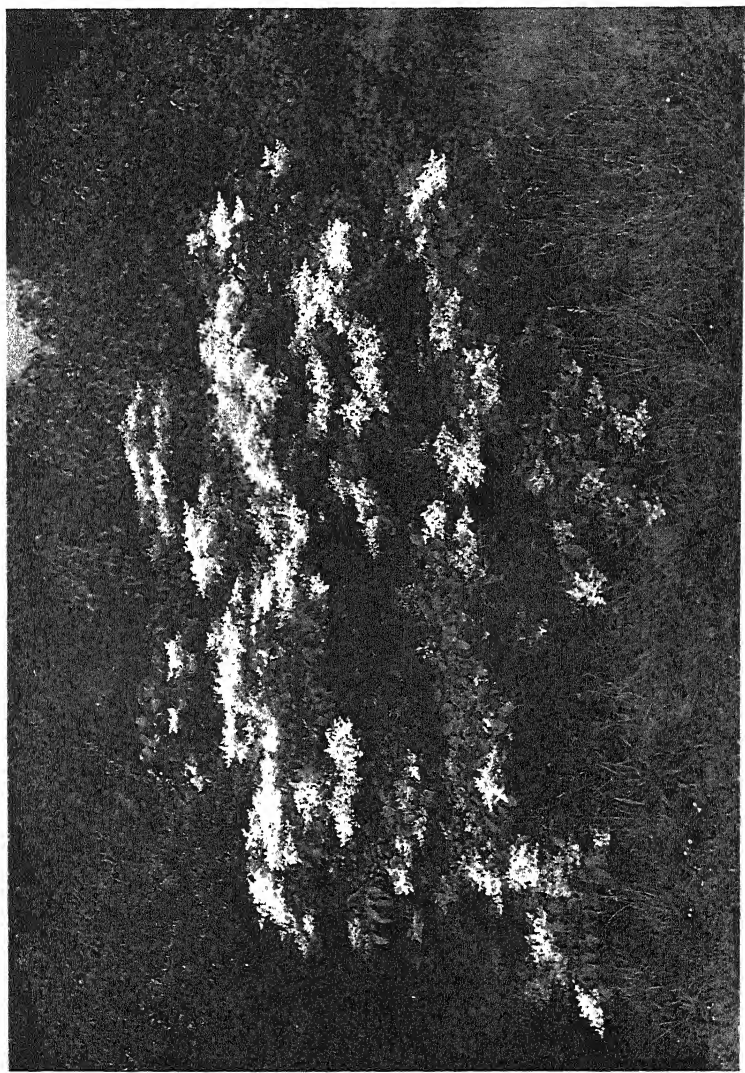


FIG. 130.—SYRINGA JAPONICA.



FIG. 131.—SYRINGA PEKINENSIS.

*To face p. 457.*

'Madame Antoine Buchner' (fig. 126) : tall, late flowering, double variety. Trusses large, soft carmine-rose tinged mauve. In this variety there is a wonderful variation in shade of colour between the bud and expanded flower.

'Madame Francisque Morel' : introduced in 1882. Tall, erect-growing variety, with rather thin branches, and producing enormous panicles of single flowers, vinaceous-purple tinged lilac-pink. Owing to the length of time this variety has been cultivated in nurseries it may generally be obtained on its own roots.

'Madame Lemoine' : introduced as long ago as 1890, it may be regarded as a first-class double white and among the best of the early introductions. Being a variety long in cultivation it is generally available on its own roots.

'Marceau' : single, deep hellebore-red. Individual flowers probably the largest of the really dark Lilacs.

'Maréchal Foch' : tall, vigorous shrub. Very large clusters of single blossoms : the individual flowers are beautifully spaced and possibly the largest of the genus, reddish argyle-purple, paling to lilac-pink.

'Masséna' : individual flowers very large, single, deep purple-red.

'Monge' : probably the blackest purple of all the Lilacs, but so far as I am aware not in commercial cultivation.

'Mont Blanc' : enormous trusses, perhaps the best single white. This is an excellent variety for cutting as the flowers last well in water.

'Mrs. Edward Harding' : free-flowering shrub of moderate growth. Flowers double, claret-red, mixed with pink, and equally beautiful when the expanded flowers have been open for several days and the colours have become paler.

'Olivier de Serres' : strong-growing variety with large thyrses of double flowers argyle-purple tinged lavender-purple.

'Paul Thirion' : introduced in 1915. Flowers double, carmine in bud, opening claret-rose, fading lilac-pink. One of the latest to flower.

'President Lincoln' : among the best of the American Lilacs, the dominant colour being light blue ; single.

'President Loubet' (fig. 127) : among the best of the deep red-purple varieties, double.

'Réaumur' (fig. 128) : a very beautiful single-flowered variety, retaining its colour well. Deep reddish-purple tinged petunia. This is a first-class variety, and not so tall growing as most.

'Vestale' (fig. 129) : magnificent single white. This is vividly impressed upon my mind as the outstanding plant in flower when I visited Coker Court ; it was a magnificent specimen grown singly on a raised bank ; every shoot was terminated by a white cylindrical inflorescence, which at a distance looked like so many white candles.

There is a very dark-flowered variety by the name of 'Negro,' which is sometimes in demand on account of its appealing name, but it is rather a poor variety since the flowers fade badly.

When one considers the large number of varieties which have

been described, it is perhaps noticeable that there is really very little difference in habit of growth and ultimate size. It is true that some varieties become broader than they are tall and do not attain to more than about 6 feet or 8 feet in height, whilst others will attain fifteen feet or more, yet in preparing a shrubbery every Lilac has to be considered a large shrub, and there is not one among them which is sufficiently dwarf to be given a place in the front row.

As with most shrubs of long cultivation, there are several variegated forms. To those who like golden-yellow the variety *aurea* would appeal; the whole leaf is suffused bright yellow.

#### HYBRID LILACS.

The 'Rouen Lilac,' rather misleadingly named *S. chinensis*, and frequently labelled by the synonymous name *S. rothamagensis*, is deservedly the most popular hybrid Lilac: it is between *S. persica*, the elegance of which it retains, and *S. vulgaris*, from which it derives its larger, brighter, lilac-coloured flowers. This beautiful shrub is believed to have originated in the botanical garden at Rouen in the year 1777; it attains a height of about 8 feet, is a more lax shrub than *S. vulgaris*, and has looser, less rigid panicles of flowers; the leaves are intermediate between the two parents. There is a variety *Saugeana* in which the flowers are inclined towards red, a white-flowered variety, *alba*, and a pleasing variety *metensis* in which the flowers are lilac-grey or slate coloured.

*S. hyacinthiflora* \* has been adopted as the type name for a new race of Lilacs introduced by LEMOINE in 1911, as a result of crossing *S. oblata* var. *Giraldii* with *S. vulgaris*. These two species are closely related and look very similar in shape of leaf and general characters, so that the varieties of this hybrid are readily confused with varieties of the common Lilac.

*S. hyacinthiflora* is a tall, vigorous-growing shrub flowering a little before the common Lilac varieties; the flowers vary in colour, but blue dominates. The variety 'Claude Bernard,' with mauve-lilac flowers, may be mentioned as one of the best doubles of this class, and 'Lamartine' as a good single-flowered variety, the flowers being similar in colour to those of 'Claude Bernard,' but usually a little later in opening.

*S. Henryi*, so named by SCHNEIDER, is perhaps better known by the synonym *S. 'Lutèce.'* It was originated by LOUIS HENRY of Paris early in the present century by crossing *S. villosa* and *S. Josikaea*. The parents themselves are so much alike that it is difficult to distinguish between them, and these already slender differences have now been halved by this hybrid, which is intermediate. The anthers are inserted in the corolla-tube about equidistant between their respective positions in the parent plants. In colour the flowers

\* It is unfortunate that this name was chosen since LEMOINE had previously given it to one of his early varieties of *S. vulgaris*.



incline towards *S. Josikaea* and always appear to have more blue in them than typical *S. villosa*.

The report of a more recent hybrid Lilac appears in a publication made in 1928 by the Agricultural Department of the Dominion of Canada. For this cross the type name of *S. × Prestoniae* has been adopted. It is the product of crossing *S. reflexa* and *S. villosa*; the original cross was made by Miss ISABELLA PRESTON of the Dominion of Canada Central Experimental Farm, Ottawa. Many seedling variants have been raised and named, and will prove valuable additions to the rather limited number of flowering shrubs which can be grown in really cold countries.

At Winchester we flowered this year the named varieties 'Miranda,' 'W. T. Macoun,' and 'Audrey.' It appeared to me that there is not sufficient difference between them to make it advisable to distinguish them as separate named varieties, though it must be agreed that the differences are as great as those existing between many of that great host of named varieties of the common Lilac. It may be said that the inflorescence is longer and more showy than that of either parent, and one of the chief distinctions in separating the named varieties is the shape, arrangement and poise of the inflorescence: in some varieties it is erect, thus following *S. villosa*, whilst in others it is inclined to be pendulous, as in *S. reflexa*. The colour of the flowers varies in shades of lilac-pink, pink being the dominant colour. The differences in shape of the corolla help to serve as another distinguishing character, but again the differences are small.

I give the following details of the three varieties named:

*S. × Prestoniae* 'Miranda': inflorescence rather interrupted, about 8 inches long, by 9 inches wide; the corolla-tube is about half an inch long, inclined to hang.

*S. × Prestoniae* 'W. T. Macoun': dense and compact inflorescence about as wide as long; corolla wide at throat, about two-fifths of an inch long, funnel-shaped.

*S. × Prestoniae* 'Audrey': inflorescence dense but widely branched, often wider than long; corolla intermediate in shape between the two preceding varieties.

As a fragrant June-flowering shrub *S. Prestoniae* is certainly worthy of a good position in the shrubbery, and is of about the same value as the hybrid *S. Henryi*. In leaf the plants are inclined more closely towards the seed-bearing parent *S. villosa*.

In a letter I received from Miss PRESTON in April last she tells of yet another cross which is proving a good parent plant. It is between *S. Josikaea* and *S. reflexa*, the former being used as the seed-bearing plant. It has been named *Syringa josiflexa*.

As recently as last month I was in correspondence with Mr. F. L. SKINNER, proprietor of The Manitoba Hardy Plant Nursery, Canada. He too has been working on the *S. villosa-reflexa* hybrids, and has produced several good named sorts, and of three of them he has sent me coloured plates. I gather one of his most distinct varieties is

'Hiawatha'; he states, "the plate shows far too much purple: I have put a 'pip' of this variety on a flower of *Rosa rugosa* and found them match perfectly."

He further writes, "I am sorry that I was not able to secure a picture of the *villosa-Sweginzowii* hybrids: these have much larger panicles than the ones of which I have sent you photographs, usually over 9 inches in length; the inflorescence is much more open and the colour is white with just the faintest blush of pink; like the *reflexa* hybrids, the *Sweginzowii* hybrids are quite fragrant. The hybrids raised by crossing *S. vulgaris* with *S. oblata* var. *dilatata* are extremely precocious in flowering, some of the seedlings having flowered when only eighteen months old: many of them also flower very early in the spring, usually a day or so ahead of *S. oblata*, which is our earliest flowering species. Another feature characteristic of this race is that though raised in 1924, so far none of the original hybrids have shown any sign of suckering. The variety I have named 'Pochahontas' is as dark in colour with us as 'L'Oncle Tom,' and the panicles are larger. 'Assessippi' has flowers near 'Rhum von Horstenstein' in colour, but the individual flowers are larger and the panicles vary from eight to twelve inches in length. All these *dilatata* hybrids flower very freely as young plants and bushes 2 feet high will often have a number of flower spikes eight to twelve inches long."

I noticed in Messrs. LEMOINE's catalogue for the present season there is reference to two other new hybrid Lilacs. Unfortunately, for both he has erroneously retained the name *Henryi*, which is already owned by the earlier hybrid between *S. villosa* and *S. Josikaea*. *S. Henryi* 'Floreale' is between *S. Henryi* and *S. Sweginzowii*, and is described as having mauve-lilac flowers. *S. Henryi* 'Prairial' is the result of crossing *S. Henryi* with *S. tomentella*, and the flowers are described as being soft-mauve and carried in broad panicles.

#### LILAC SPECIES.

In a paper of this kind botanically accurate descriptions of the Lilac species in cultivation are perhaps uncalled for. They may be had from the three standard works which I shall refer to in conclusion, but possibly a few notes will be useful and encourage interest in this attractive small family of mostly June-flowering shrubs or occasionally small trees.

Early in the paper I mentioned *S. amurensis* and its near ally *S. japonica* (fig. 130). The latter is most certainly a distinct and conspicuous small round-headed tree as yet not sufficiently planted to do it justice. Flowering in the latter half of June, it blossoms when the shrubberies are dull and there are few other trees in blossom since by this time the wealth of the spring flowers is past. It will attain to about 30 feet high, and freely produce its large panicles of creamy-white flowers.

Another tree-like species is *S. pekinensis* (fig. 131). The large



FIG. 132 —SYRINGA REFLEXA.



FIG. 133.—SYRINGA PINNATIFOLIA.

inflorescences are very like those of *S. japonica* except that on account of the slender branches the flower spikes are usually more or less pendulous, whereas those of *S. japonica* are erect. Its slender spreading branches and lance-shaped acuminate leaves readily distinguish it from kindred species. There is a weeping form, variety *pendula*.

*S. emodi* is a late-flowering more or less tree-like species from the Himalaya. It has stout erect branches and is outstanding among Lilacs by its large leaves, which are conspicuously glaucous beneath. Its flowers are cream, occasionally flushed pale lilac-pink. Of this species a golden variegated form is in cultivation.

*S. villosa* from North China is a compact, densely foliaged bush of oval outline attaining about 12 feet high. The flowers vary in shades of lilac-pink, never violet-purple, and are carried during June in dense, many flowered, stiffly-erect, terminal panicles. In the variety *alba* the flowers are approaching white.

The 'Hungarian Lilac,' *S. Josikaea*, is so nearly related to *S. villosa* that some authorities consider it is a variety of the latter species. In the absence of flower it is not easy to separate these two since in leaf and habit of growth they are very much alike. In flower the differences are fairly well marked, *S. Josikaea* having deeper violet-purple flowers with a rather longer, more interrupted inflorescence, in which the flowers are inclined to be arranged in whorls. Then, too, the corolla is wider across the mouth and less spreading.

In 1918 we sowed seeds of FORREST's collecting labelled *S. formosissima*, which plant has since been recognized as *S. Wolfi* of Schneider. It was introduced to cultivation from Manchuria and Korea in 1910, and obviously belongs to the *Villosae* section. The lilac-purple flowers are not unlike those of *S. Josikaea*, but the inflorescence is usually larger. In leaf this species is also very like *S. Josikaea*, and the nearly related *S. villosa*, but as a rule the leaves seem a little broader, are more consistently ciliolate at the margin, of a paler green, less glossy above, and the smaller reticulate veins are more conspicuous beneath than in either *S. Josikaea* or *S. villosa*. The branches are of a rather pale ashen-grey colour.

A very delightful, small-growing Lilac generally under 6 feet high is *S. Julianae*. It may usually be recognized by its comparatively small, ovate, soft, downy leaves and slender, velvety twigs. The flowers appear about mid-season and are rather loosely arranged in small, irregular panicles, and are a fairly consistent shade of lilac-mauve. It is reported to be closely allied to *S. pubescens*, but I have not had an opportunity of examining this latter species; from *S. velutina* (syn. *S. Palabiniiana*) it may be readily distinguished by being much more pubescent. *S. velutina* has larger leaves, and is of stiffer, more erect habit. Its branches are often inclined to be four-sided, and in some forms the flowers are nearly pink, though lilac-mauve is the typical colour.

We have not *S. pinetorum* in our Winchester collection, and I am indebted to Dr. COWAN of the Royal Botanic Garden, Edinburgh, for

sending me a flowering specimen. It is a rare species showing close affinity to *S. Julianae*, with flowers violet-purple in bud, opening lilac-mauve. It is downy on most of its parts, especially so on the under-side of the leaf, which is covered with pilose hairs, most apparent on the primary veins. To me the only obvious difference between this species and typical *S. Julianae* is that in *S. pinetorum* the leaves are larger and definitely bullate, the veins being impressed above and very prominent beneath. Most of the plants in cultivation under this name are really *S. yunnanensis*.

*S. Potaninii* is yet another species showing kinship with *S. Julianae*. It is a tall, slender shrub, with small lilac-pink flowers carried during the latter part of May and early June. The leaves are densely velvety pubescent on both surfaces.

The tall-growing *S. oblata* in its various forms may usually be recognized by its habit of early flowering. The leaves in shape perhaps resemble *S. vulgaris* more than any other species, and in some forms are an attractive coppery-red colour when unfolding. It is tall and slender and not densely branched, and is essentially a "back row" shrub.

*S. microphylla* is a slender-branched shrub introduced into cultivation from North China and Korea in 1914. The flowers are lilac-pink, carried in loose pubescent panicles. The comparatively small leaves are inclined to be rounded.

The Nodding Lilac, *S. reflexa* (fig. 132), is so named on account of its curved pendulous panicles. It is a very remarkable shrub. The flowers are deep carmine in bud, opening rich pink, and carried in conspicuous long slender panicles. The dark green ovate leaves are among the largest of the genus: on vigorous barren shoots I have measured leaves up to 8 inches long and more than half as wide.

*S. Komarowii* is a rather elusive Lilac. Most of the plants I have seen so labelled seem to be referable to *S. reflexa*. It may be that one day *S. Komarowii* will be considered a variety of *S. reflexa*. Its chief difference appears to be its narrow cylindrical inflorescence, which is more crowded and compact.

There are three Chinese Lilacs which, though well marked and distinct in their typical forms, are, nevertheless, often very bewildering and difficult to identify. I refer to *S. tomentella* (with which are synonymous *S. Wilsonii*, *S. albo-rosea*, *S. Adamiana* and *S. Rehderiana*), *S. Sweginzowii* (from which LEMOINE's variety *superba* does not seem to differ), and *S. yunnanensis*. Whether or not the difficulties are increased on account of there being hybrids between these species I am not yet prepared to say, but certainly some plants which I have seen suggest hybrid origin, and it is not always easy to say to which of these three types a given plant belongs.

*S. tomentella* in its typical form has deep lilac-pink flowers, opening lilac-pink and passing to nearly white before falling; the primrose yellow anthers reach almost to the mouth of the corolla. Flowers about half an inch long, crowded in large terminal or lateral inflores-

cences which average about 6 inches long by 4 inches wide. The leaves are variable in shape from broad-ovate to elliptic-lanceolate; from *S. yunnanensis* they differ in being green and not glaucous beneath, and from *S. Sweginzowii* in being usually larger, more corrugated, and rough to the touch. E. H. WILSON, referring to this Lilac in its native habitat, writes, "I saw this plant in flower for the first time on July 8, 1908, on the frontiers of Eastern Tibet at an altitude of nine thousand feet, and I thought then that I had never before seen such a handsome species of Lilac. It had foot-high, broad panicles of pink to rosy-lilac-coloured flowers, and on other bushes they were white. The plants were from 8 to 15 feet high, much branched yet compact in habit, and the wealth of flower clusters made them conspicuous from afar."

*S. Sweginzowii* is a rather more slender-branched shrub than its relative and neighbour *S. tomentella*. The flowers may usually be distinguished by the fact that the stamens only reach to about half the length of the slender corolla-tubes, in which they are nearly concealed. The leaf is of thinner texture, smoother, and smaller than those of *S. tomentella*, sometimes inclined to be orbicular-ovate; pubescence when present is mostly confined to the base of the leaf.

*S. yunnanensis* seems to have been more fortunate than most Lilacs in having escaped frequent christenings at the hands of sundry botanists. In its best forms the flowers in bud are purplish-rose to lilac-pink, opening pink, eventually becoming nearly white before falling. Like most other Lilacs, the colour varies considerably, and in its darkest form it is truly beautiful, and was without doubt the best Lilac species flowering at Winchester this year. The inflorescence varies from about 6 to 10 inches long and 3 to 5 inches wide. In its typical form this species may be distinguished from kindred species (excepting *S. emodi*) by the glaucous under-surface of the leaves. I am anxious to exonerate this attractive Lilac from the stigma it has received at the hands of Dr. REHDER, who, in his Manual of Cultivated Trees and Shrubs, describes it as a "loosely branched shrub, one of the less showy species."

The so-called Persian Lilac, to which reference has already been made, is a densely branched shrub attaining to about 8 feet in height, and has slender interlacing branches. The leaves are comparatively small, mostly lanceolate and occasionally lobed. The fragrant flowers are pale lilac, carried in loose panicles. A form with nearly white flowers is distinguished as variety *alba*, and a slower-growing shrub in which the leaves are conspicuously three to nine lobed is described as variety *laciniata*.

The Pinnate-leaved Lilac, *S. pinnatifolia* (fig. 133), is well worth its place in some odd corner of the garden, if only for the fun it gives. I think 5 per cent. would be a generous estimate of the number of keen gardeners who when asked if they know the plant, recognize it as a Lilac: a large proportion suggest it might be a kind of small Mountain Ash! It comes from West China, and attains about

6 feet high ; its flaky bark is nearly as arresting as its leaves, which comprise seven to eleven leaflets ; the white flowers are not as a rule freely produced.

A Lilac which is still rare in cultivation, though introduced from North China in 1908, is *S. Meyeri*. I have not seen it in flower, but it is likely to be a useful addition to the family, especially since it is comparatively small and compact. The flowers are described as violet, carried in dense panicles.

In closing I would say to those who want to get a little more familiar with the Lilac and who have not the time to wade through the crammed pages of information in MCKELVEY's wonderful standard work, or to refer to such a grimly authoritative work as REHDER's Manual of Cultivated Trees and Shrubs, and who desire something a little more friendly and leisurely than BEAN's Trees and Shrubs Hardy in the British Isles, I would recommend a delightfully readable little book by Mrs. ALICE HARDING entitled, *Lilacs in My Garden*.



## HORTICULTURAL EDUCATION IN THE COUNTIES.

By G. C. JOHNSON.

[Read September 30, 1936; Dr. A. B. RENDLE, F.R.S., in the Chair.]

HORTICULTURAL education forms part of the work undertaken by the Education and Research Division of the Ministry of Agriculture. The work of this division of the Ministry is the subject of a report which appears each year in the Journal of the Ministry of Agriculture; the last published report appeared in three successive issues of that Journal, namely, October, November and December, 1935. If this report is read, the wide scope of agricultural education and research will be realized.

The following paragraph, taken from the report for the year 1931-2, will serve as an introduction to this survey of horticultural education as carried out in the county of East Sussex :

"Agricultural education in England and Wales is provided by two agencies: County Councils and Agricultural Colleges (which term includes University Departments of Agriculture). The County Councils work mainly through the County Education Committee or the County Agricultural Committee; practically all of them employ an Agricultural Organizer and a staff of expert assistants for horticulture, dairying, poultry husbandry, etc. The Organizer and his staff are the 'general practitioners,' whose aim is a healthy and prosperous industry, and whose advice is available to all farmers in whatever branch of the industry they are engaged. In addition to their advisory activities, the staff instruct the adolescent, either at the County Farm Institute (where one exists) or at other centres throughout the county. Higher education is provided at Agricultural Colleges (including University Departments of Agriculture). The system is entirely voluntary. The Ministry's part is to co-ordinate the activities of local authorities and institutions and to assist and stimulate them by means of 'grants-in-aid.' "

The county horticultural officer is linked up with a provincial advisory centre, and at these centres are stationed specialist advisory officers who can deal with problems which are not familiar to the county horticultural officer. These specialist advisory officers are in turn linked up with other research workers in the British Isles and other parts of the world, so that the horticulturist can truly be said to be linked up, through his county horticultural officer, with every phase of horticultural research throughout the world.

According to the report referred to above, 93 horticultural officers are employed in 55 administrative counties. Sufficient is it to say

that in most counties of England and Wales at least one horticultural officer is available to carry out horticultural education within the county. Of what does this horticultural education consist?

There is a saying that one half of the world does not know how the other half lives. It is proposed this afternoon to tell you how one individual carries out horticultural education in one county. Whether or not this is a true picture of horticultural education in England and Wales must be left for others to judge. A week's work on horticultural education in East Sussex will be described, and you are particularly asked to note the large amount of team work that is necessary to carry out the work in an efficient manner.

The term "general practitioner" was used by the Ministry in its 1931-2 report. A county horticultural officer is an efficient officer only as long as he remembers his general terms of reference. He has to remember that he serves as the link between the growers and the science and practice of horticulture. A general practitioner cannot know everything; *his job is to know where the information can be found*. In the account which follows it is hoped that all will realize how each branch of horticultural education, in its widest sense, is linked to the ratepayers of a county through the county horticultural officer.

Before describing a week's work in horticultural education in East Sussex it is necessary to state that the county possesses a Farm School where some 40 students are taught agriculture and horticulture. Last year 12 of these took horticulture, but all students are given lectures on the cultivation of fruits and vegetables. A garden is attached to the farm, the garden being used for practical work in connexion with the teaching of horticulture; some glass is available. Out-of-doors all the vegetables required for feeding the students and staff at the Farm School are produced. All kinds of hardy fruits are grown in the garden except sweet Cherries, the fruit surplus to the Farm School's requirements being sent to Covent Garden Market. The garden is serving as a daughter nursery of East Malling Research Station for the production of "Mosaic-free" 'Lloyd George' Raspberry canes and "Yellow-edge-free" 'Royal Sovereign' Strawberry runners. The Raspberry canes and Strawberry runners are examined once or twice each year by the research staff at East Malling and any specimens showing raspberry mosaic or strawberry yellow-edge are rogued out.

Monday. On reaching the office the following correspondence awaits the county horticultural officer:

(1) A grower asks for information on the cultivation and storing of Filbert Nuts. A letter is sent giving details of the storing of nuts and suggesting that the cultivation of nuts is fully dealt with in a Ministry of Agriculture publication entitled "The Cultivation of Nuts." A letter is sent to the Ministry asking that a copy of this leaflet be sent to the grower.

(2) A letter and a diseased specimen pear. The cause of the diseased pear is obscure; it looks like a storage rot, but may be Brown

Rot. It is sent to the mycologist at the East Malling Research Station, who has worked on this group of fungi. A letter is sent to the enquirer stating what has been done. A few days later a letter is received from Malling giving the fungus concerned and control measures; a copy of the East Malling report is then sent to the grower.

(3) A flowering branch of a shrub, together with a letter asking its name and if it will grow on chalk. The shrub is not recognized and is sent to the Curator, Royal Botanic Gardens, Kew, who replies :

"I beg to acknowledge your letter of September 18 and the enclosed specimen for identification. This is *Buddleia auriculata*, a South African species which is not very hardy, although it has stood in one of the bays outside the Temperate House for a good many years now. So far as I know it should succeed on a chalk formation as I think most of the *Buddleias* are not particular in this respect."

A copy of the letter received from Kew is sent to the enquirer.

(4) Another shrub and a letter requesting its name. A letter is sent to say that the shrub is *Pyracantha coccinea* var. *Lalandei*, and that the shrub still appears in some catalogues as *Crataegus Pyracantha*.

The rest of the correspondence deals with requests for advisory visits, lectures and the purchase of Raspberry canes and Strawberry runners.

After the correspondence, lecture notes are prepared for a lecture to be given on Wednesday evening to a Horticultural Society. The subject is "Plant Propagation"; the notes are to be stencilled and handed round to each member of the audience. A visit to the garden at the Farm School (five miles distant) completes the morning's work. During the visit to the garden current work is planned.

Monday afternoon is spent paying two advisory visits previously arranged; the first to a private garden, the second to a commercial grower. The trouble in the private garden is found to be with Raspberries and is thought to be "Spur Blight of Raspberries." A doubt exists and specimens are collected. During the visit other problems are raised by the owner, the non-fruiting of several Plums is traced to birds removing most of the fruit buds during winter, the correct pruning of cordon Apples is demonstrated, and treatment for a leggy Privet hedge prescribed. At the commercial grower's place the problem is the cultivation of Vines and Peaches under glass, crops which he has not handled before. During the last two years he has had two men on the place, each one of whom has been recommended by other growers as being fully acquainted with the commercial cultivation of Vines and Peaches. Both Vines and Peaches have been a failure on this place during the last two years. There appears to be a shortage of men with the requisite knowledge in this direction. The grower is advised upon the treatment of the Vines and Peaches, and a visit to other growers handling the crops is recommended.

Two lectures to the students at Plumpton Farm School are given

during the evening, one to the junior and one to the senior agricultural students.

On Tuesday morning a successful grower of Peaches is written to, asking him if he will receive the man who was visited yesterday afternoon. In the course of a day's post the visit of the unsuccessful grower to the successful grower is arranged. When this visit took place *both* growers benefited considerably.

Telephone calls interrupt dealing with the rest of the correspondence. A market gardener rings up to ask the best Onion to sow in autumn for the production of ripe Onions during 1937. The enquirer is referred to the Journal of the Ministry of Agriculture, July 1936—Onion Growing in England. Information is added to the effect that Improved White Spanish is worth consideration in the south-eastern district. Another telephone enquirer asks how long must elapse between applications of quicklime and sulphate of potash to Apples in grass. He is told that the one may follow the other as soon as he desires.

On getting back to the correspondence it is found that it is mainly connected with routine work and requests for advisory visits and forthcoming lectures. The rest of the morning is spent in paying two advisory visits; the first concerns a grower of Chrysanthemums who has been badly troubled with Chrysanthemum eelworm for several years. It is explained to the grower that epidemic attacks of eelworm on Chrysanthemums are largely due to lack of rotation. Growers *will* fill up every corner of their nurseries *every* year with Chrysanthemums; if they would only realize that half the number of plants grown well would make more money than double the number badly grown, all would be well. A method of cleaning up the stock was advised and the grower's attention drawn to a paper by W. E. H. HODSON, published in the Horticultural Education Association Year Book, Vol. II (1933). Because so many of the eelworm-affected plants showed a large amount of dead root, specimens were collected for submission to our Provincial Area experts. Before leaving this nursery the grower called attention to a batch of Dahlias imported from Holland this spring. All the foliage on the Dahlias was very badly spotted and the plants looked unthrifty; the trouble was not recognized. Growing alongside was a break of Zinnias also showing spotted foliage and poor growth, and a batch of the large-flowered Gladioli in a similar condition. Specimens of Chrysanthemum, Dahlia, Zinnia and Gladiolus were collected and brought away.

The second visit was to another glasshouse nursery, and attached to it was two acres of orchard, mainly Pears in grass. The owner of this nursery wanted advice on the cropping of the glass through the winter months, and especially the treatment of his greenhouse soil because the growth of his Tomato plants had been poor throughout 1936. Soil treatment was demonstrated and a crop of Guernsey climbing Beans advised for January 1937. This crop would remain in the houses until July, and after clearing the Beans, late-flowering

Chrysanthemums would follow, thus giving the soil a rest from Tomatos for one year. The foreman on this particular place is a Plumpton trained man and is therefore familiar with the cultivation of climbing Beans. During the afternoon of Tuesday the garden at Plumpton Farm School was visited, and two hours' practical instruction of the students supervised. On Tuesday evening a Ministry of Agriculture Extension Lecture was held in Lewes. Each year the Ministry make the necessary arrangements to provide a panel of lecturers from the various horticultural research stations, colleges and advisory centres. Each lecturer is an authority on his own particular subject, and from this panel local authorities may choose the subject and lecturer. On this occasion after consultation with the Growers' Branch of the East Sussex National Farmers' Union, Dr. BEWLEY of Cheshunt Research Station was chosen and his subject was "The Cultivation of Tomatos for High Quality Fruit." Seventy growers from various parts of East Sussex (some of them travelling 20 miles each way) assembled to hear Dr. BEWLEY tell of the latest developments of the glasshouse industry. Many questions were asked and answered.

On Wednesday morning, before going out on county work, there was just time to get off letters to the South-Eastern Agricultural College with reference to the specimens collected on Tuesday. The Chrysanthemums were sent to the advisory entomologist asking him to examine the root systems and to give his opinion as to whether or not eelworm was responsible for the dead roots and suggesting that he might consult with his colleague, the mycologist. The Dahlia, Zinnia and Gladioli were sent to the advisory mycologist asking for his opinion. Before we forget these specimens, let us clear them up. Two days later letters were received as follows :

"The Chrysanthemum material you sent is undoubtedly quite badly affected by Chrysanthemum eelworm.

"This eelworm does not normally attack the root system, and I should very much doubt if it has been responsible for any such injury. I do not think there is any insect attack on the roots, and I will hand them on to the mycologist to see if he can make anything of them."

"The disease on the Dahlia is the Leaf Spot caused by *Entyloma Dahliae*. This is likely to prove a serious trouble. A full account, with remedial measures, is given by PETHYBRIDGE in Gard. Chron., 84, 1928, p. 393 ; and by GREEN in Journal of the Royal Horticultural Society, 57, 1932, p. 332. Will you please send information *re* name of variety, and whether treated as annuals or perennials, extent of damage and financial loss. The Zinnia and Gladiolus are giving us more trouble, and we will write later."

Later in the week a letter was received from the advisory entomologist arranging a meeting at the grower's place for the following week to investigate the cause of the dead roots of the Chrysanthemums.

The first advisory visit on Wednesday was to a fruit-grower's place,

and by previous arrangement members of the East Malling Research Staff were met at this place. The various problems pertaining to the place were discussed with the research staff and the grower. Incidentally the grower complained that a hedge planted for shelter was getting bare at the base, and the county officer suggested that hedges with perpendicular sides often get bare at the base, whereas if the hedge was trained to a point at the top it frequently remained good at base. Leaving the grower's place the county officer and the members of the East Malling Research Staff proceeded to the garden at Plumpton Farm School and several hours were spent in roguing the stocks of Raspberry and Strawberry material of virus infected plants. After the departure of the East Malling people a clone Tomato plant of the 'Plumpton King' variety was selected for our own stock of seed next year. During the evening the lecture on "Propagation" prepared on Monday was given to the Eastbourne Horticultural Society; the audience numbered 74.

Thursday morning meant a lot of correspondence because that for Wednesday morning had been left owing to a full day out in the county.

Following the roguing of the Strawberry material yesterday, instructions were sent to the garden staff at Plumpton that the 12,000 Strawberry runners ordered by county growers should now be dispatched in strict rotation as the orders were received. Thus 12,000 Strawberry runners derived from hot-water treated parents and believed to be "Yellow-edge-free" will be dispatched to commercial growers in East Sussex. Approximately 18,000 Raspberry canes believed to be "Mosaic-free" will be ready for delivery to growers in November.

Several letters asking for lecture dates and advisory visits were cleared up, and amongst others the following advisory letters answered.

(1) A correspondent complained that his Plum trees had lost all foliage because of a bad attack of "Plum Rust"; would the disease do any damage to the trees, and if so what control should be used? The reply stated that "Plum Rust" was always bad in the South-Eastern area and that, unless defoliation occurred very early, little damage resulted. When early defoliation occurred every year it would be advisable to use a good copper fungicide as soon as the fruit was off.

(2) Another correspondent wrote asking what he could do to remove creosote from the inside of garden frames; the creosote had been put on and the first batch of plants put into the frame killed. The grower was advised to destroy the frames.

On Thursday afternoon two advisory visits were paid, both in connexion with the suitability of land for the cultivation of dessert Apples. The first place visited offered no difficulties, the soil auger showed that the land was perfectly drained and deep enough for the purpose. On the second place the land was found to have defective drainage and it was felt that a further opinion should be taken. In consequence a letter was sent to the Geological Department of the

South-Eastern Agricultural College, Wye, asking for an officer to visit the grower's place and report.

Thursday evening was spent at Haywards Heath, where a class in horticulture was being held. These classes are attended by young gardeners drawn from private places and nurseries over approximately a 14-mile radius. These young people come into Haywards Heath once a week and are given instruction in horticulture. The subject for this particular evening was "The Practice of Manuring."

A printed set of notes was handed to each student and they were expected to take additional notes as the lecture proceeded. Actually the printed notes are of little use without the lecture, but they serve as a basis upon which each student can build up the subject matter of the lecture. There are 64 students on the register at Haywards Heath, and the average attendance at 20 classes last year was approximately 50.

Friday morning's correspondence consists of the usual administrative letters, and in addition one asking for information *re* the source of published papers dealing with the forcing of Tulips. The county officer writes to the Secretary of the Royal Horticultural Society asking for the necessary information. A few days later a letter is received from the Editor of the JOURNAL of the R.H.S. giving the necessary information; a copy of this letter is sent to the enquirer.

During the morning a telephone call is received from a grower who wishes to export some plants to a foreign country. He believes that a certificate is required; the grower is referred to the Ministry of Agriculture's District Inspector. Friday afternoon calls for two advisory visits, both to private owners. The first is in connexion with lawn problems—the owner's attention is drawn to the publications sent out by the Board of Greenkeeping Research, Bingley, Yorks. It is pointed out to the owner of the lawn that he has ruined his grass by rolling when the soil was in too wet a condition. Owners of lawns delight in rolling lawns when the impression of the roller can be seen. In reality this is the only time at which lawns ought not to be rolled. Some trouble is being experienced with weeds and lawn sand treatment is recommended. The owner gives the information that lawn sand has been used, but it is pointed out that if lawn sand treatment is to be successful it is essential that it is continued until the weeds are under control. One application of a lawn sand on a weedy lawn is very largely waste of money.

The second visit is in connexion with the control of Codling Moth. The owner of the garden is confident that the pest concerned is "Apple Sawfly"; this idea has arisen because of the wrong interpretation of a B.B.C. broadcast. It is pointed out to the owner of the garden that Codling Moth and Apple Sawfly can usually be separated inasmuch that Sawfly-attacked Apples drop in late June, whereas those attacked by Codling Moth drop very much later in the season. The control of Codling Moth is demonstrated to the owner.

Saturday morning is spent dealing with correspondence and reports to the various people to whom advisory visits have been paid

during the week. Several office interviews are granted ; these office interviews are connected with all types of problems in connexion with horticulture. One example is appended. A man has called at the Ministry of Agriculture's office in Whitehall asking for information in connexion with Mushroom growing. At the Ministry's office he has been given certain information, but because he lives within the administrative county of East Sussex he has been referred to the county officer for further information. The county officer arranges to visit his place at a later date.

During the week chosen to illustrate the work of a county officer it has not been possible to link up the whole of the work, although the week chosen is fairly typical. The following illustrations will serve to show how other contacts are made.

A. It has been shown above how the county officer is linked up with his advisory centre. On occasion a disease is sent in to the advisory centre and proves to be caused by a fungus not recorded in the literature in the possession of the mycologist. The advisory mycologist then gets into touch with the Ministry of Agriculture's Pathological Laboratory at Harpenden. Sometimes a similar case has been previously sent in to the laboratory, and then the relative correspondence and reports are sent to the advisory mycologist, who in turn sends copies to the county horticultural officer, and the latter is responsible for passing on the information to the grower. Occasionally the organism is entirely new and, if the nature of the damage and the importance of the crop warrants it, research work is put in hand to attempt to clear up the problem.

B. Demonstrational work is carried out at various centres within each county ; one example will serve as an illustration. In East Sussex we have scattered throughout the county specimen allotment plots. The owner of a specimen allotment pays his own rent, does his own work and removes his crops as and when they are ready. The Horticultural Sub-Committee provides the owner of the plot with a collection of seeds, a load of farmyard manure, certain artificials and a *cropping plan*. All that the owner of the plot undertakes to do is to put in his rows of crops strictly according to the cropping plan provided. The cropping plan is based on a three-year rotation and hence each plot is kept going for a period of three years. During the three years the allotment serves as a demonstration of systematic cropping to other allotment holders. Because the county officer visits the plot from time to time for supervision, other allottees in the group collect up their problems, and solutions are asked for at the time of the supervision visits. The importance of allotments and the amateur's garden is perhaps not generally realized. These gardens serve to provide recreation of mind and body, and thus tend to contentment of mind and improved health of the nation. Further, the purchases made by these amateur gardeners form the bulk of the horticultural trade known as the nurseryman and seedsman.

C. Much experimental work, as distinct from demonstrational work, is carried out in the county. A local problem occurs, control





FIG. 134.—*CYPRIPEDIUM CALCEOLUS* IN DR. STOKER'S GARDEN.

[To face p. 472.]



FIG. 135.—*CYPRIPEDIUM MACRANTHON* IN DR. STOKER'S GARDEN.



FIG. 136.—*CYPRIPEDIUM REGINAE* IN DR. STOKER'S GARDEN.



FIG. 137.—*CYPRIPEDIUM PUBESCENS* IN DR. STOKER'S GARDEN.

measures for which are unknown ; after careful laboratory work at the advisory centre the officer concerned requires to carry out field experiments. The county officer finds a grower willing to allow experiments to be carried out on his place ; the advisory and county officers then carry out the necessary experimental work.

D. Educational exhibits at Horticultural and Agricultural Shows throughout the county form an important part of every county officer's work. In East Sussex it is the rule to stage an exhibit dealing with one subject or problem. If possible, living material is used ; the public will not look at museum material. Last year an exhibit was staged at several shows to demonstrate the control of " Tulip Fire." Specimens were exhibited showing the damage caused by the disease to foliage and flowers ; bulbs bearing the black resting bodies of the fungus on the brown scales and old flower stalk bases were included. Tulip bulbs lifted after one, two and three years' growth showed that the amount of infection tended to increase the longer the bulbs were left to grow in the same position ; methods of lifting and cleaning bulbs were demonstrated. The exhibit demonstrated that " Tulip Fire " could be controlled under outside conditions if growers would lift tulips at least every second year, clean the bulbs and replant the cleaned bulbs on a fresh site. Dozens of similar exhibits have been staged in East Sussex during the last eight years.

E. The county officer is often called upon to write articles. In East Sussex there is an official publication known as the East Sussex Farmer. A note was recently written on the control of Flea Beetle. Growers were advised to mix one part naphthalene with four parts of Brassica seed and to drill both together ; the resulting seedlings were to be treated with derris dust. An advisory officer in another part of the country read the article and sent along additional information which has since proved useful. Many other examples might be given along these lines to show how the various workers pool their knowledge. The county officer is kept up to date in various ways. He must read widely, and in this connexion it can definitely be said that most county officers could be more useful to the county if they had less work to do and more time to read of what others have done.

In the south-eastern province a conference between all the various sections of horticultural officers (research, advisory and county) takes place every third month. These provincial conferences are organized by the South-Eastern Agricultural College, and the county officers of Kent, Surrey and Sussex owe much to the convener, Mr. R. T. PEARL, for the work he puts into these conferences. If the results of these conferences are so beneficial to the county officers, they must also serve the same purpose to research and advisory officers.

From time to time the Ministry of Agriculture organizes courses of instruction in various phases of horticultural practice. A recent one dealt with the Marketing of Fruit and Vegetables ; visits to markets, packing stations and to growers' places served to demonstrate what the market wants and how it gets it. Incidentally, the course served to show how much the market gets that it does not want.



The Horticultural Education Association plays its part in the liaison work ; the personnel of this Association consists of research, advisory, and county officers. The object of the Association is the advancement of horticultural education and research. It promotes the co-ordination of educational and research work in relation to horticulture and the horticultural industry. It takes an active part in the campaign for translating research findings into terms of improved practice. The publication of the Association—Scientific Horticulture—contains research summaries, reviews and original articles on many aspects of horticultural education, research and progress in practice. In conjunction with the Ministry of Agriculture and the University, Reading, horticultural refresher courses are organized every third year at Reading University. These courses serve a similar purpose to that of the provincial conference, except that the Reading courses are on a national basis instead of a provincial one.

This somewhat lengthy summary of horticultural education is deficient in many respects. It does not take into consideration the vast amount of work done by the officer employed by education authorities in connexion with school gardening. In some counties the horticultural officer is responsible for school gardening throughout the county, in addition to the work outlined above ; in other counties special officers do this work. In East Sussex the work of the Education Committee and the Agricultural Committee is distinct and, therefore, it must be left to others to speak of horticultural education from the school garden standpoint. Another side of the question upon which I am not qualified to speak is the vast amount of educational work done by the parks officer.

Sufficient has been said to indicate that horticultural education is a wide subject, and to illustrate the large amount of teamwork which goes on to enable the grower to obtain necessary information.

There are still many gaps to fill before the work is complete ; much more information is required upon vegetable problems. Valuable work is being done in various centres along these lines, but the information available is still very scanty. We still do not know how to apply the correct manures to an acre of cabbage. In the main, good commercial stocks of Brassica seed are not available. On the cut flower and pot plant side of commercial horticulture little or no research is being done ; a crying need of the moment is a research station devoted to problems connected with these crops. Another weakness is research upon problems relative to garden plants, trees and shrubs. One has only to read *The Living Garden*, by Salisbury, to realize how much might be contributed in this department to horticultural education if only the money were available. It is fashionable to-day for the poor to indicate how the rich may spend money, and, therefore, a county officer may perhaps be allowed to conclude his remarks on horticultural education by saying that the Royal Horticultural Society could spend money in no better way than on more research work relative to the problems which arise in the amateur's garden.

## EASY-GOING CYPRIPEDIUMS.

By Dr. FRED STOKER, F.L.S.

HARDY *Cypripediums* are capable of division into two great classes, the amenable and the recalcitrant. It is the former with which we are here concerned, Whilst freely admitting the beauty of many passive resisters to cultivation, *Cypripedium acaule* for example, one's regard is tempered by that manly indifference voiced by GEORGE WITHERS :

" If she be not fair to me  
What care I how fair she be ? "

Fashions in footwear were very different from our own when the genus received its original name of *Calceolus*—a small shoe or slipper. Roominess was apparently the order of the day and appearance a secondary consideration. In common with so many plants, the familiar European species was given a pietistic relationship for the furtherance, presumably, of religious propaganda, and in the sixteenth century we find it spoken of as *Calceolus Marianus* by DODOENS and as *Calceolus Mariae* and *C. sacerdotis* by GERARD and others. In the vulgar tongue of our own country this became Our Lady's Slipper, and later, Lady's Slipper; any lady's, you observe. If, indeed, we are to believe the literature on the subject, the name became further corrupted into Ladies' Slipper, the borrowing of footwear being apparently a common practice. But there are lands where the vulgar name is preserved in all its purity and charm. In Italy, for instance, Scarpa della Madonna is in common use; what could be more harmonious, more picturesque? France, ever disposed to toy with paganism, allows Sabot de Venus to share its favour with Sabot de la Vierge. The impossibility of imagining either lady in sabots seems to have escaped the usually alert Gallic perception. The German panders to neither popery nor paganism. "A Primrose by the river's brim a yellow Primrose is to him," and this Orchid is merely the Common Lady's Slipper. One conceives that LINNAEUS was swayed more by the pleasure of Hellenizing a familiar name than by any desire to honour the goddess in giving the genus its modern appellation of *Cypripedium*, the Shoe of Cypris (Venus), whilst retaining the old generic name to designate the species with which he was familiar. It became, therefore, *Cypripedium Calceolus*.

An undue concentration on the specific name *Calceolus* appears to have led to the prevalent notion that this *Cypripedium* is a lime-loving plant—nay, a plant for which lime is an essential. This supposition receives no support from the cold facts of ecology. It is almost invariably found in or at the margins of woods and in coppice growth.

The soil is consequently covered annually with decaying foliage. Whatever the nature of the sub-soil, the characteristic superficial rooting system of a *Cypripedium* cannot reach it; if it could, only a leached, acid or neutral soil would be available as a general rule. Not that *C. Calceolus* has any objection to a limy soil; it will indeed thrive in such a medium if given the necessary accompaniments of shade and moisture. The original few plants from which the colony illustrated in fig. 134 was grown were collected in the Dolomites. The River Ansiei, in part of its course, runs between mountains on one side and cultivated meadows on the other, the meadow bank being some 5 feet above the water-level at the height of summer, and

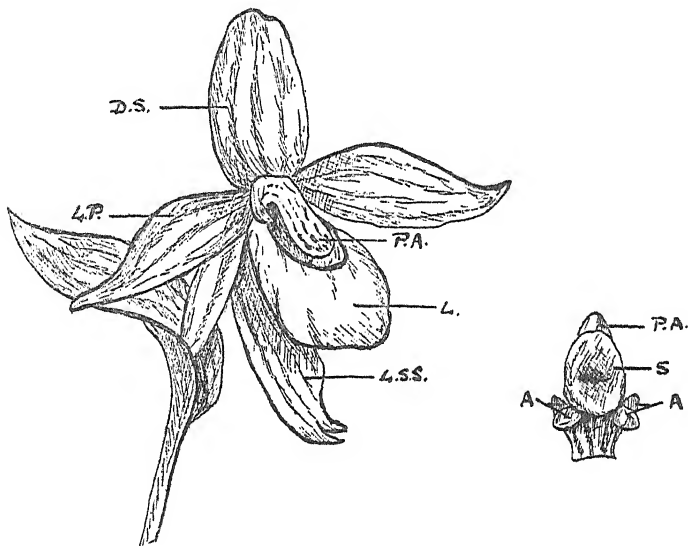


FIG. 138.—DIAGRAM OF CYPRIPEDIUM FLOWER.

D.S., dorsal sepal. L., lip. L.P., lateral petal. L.S.S., lateral sepals. P.A., under surface of sterile petaloid anther of which the upper surface is shown in the small figure. S., stigma. A., fertile stamens and pollen sacs.

fringed with Hazels near its margin. There, in the filtered light of the Nut copse, grows *C. Calceolus* in association with its favourite companion, Lily of the Valley. The soil appears to be a sandy alluvium; no particles of limestone or of shells are apparent to the eye. Nevertheless, it is quite likely that spring floods, laden with limy debris from the surrounding hills, deposit a calcareous silt upon the soil; on the other hand, summer rains will leach it and decaying leaves tend to neutralize its superficial alkalinity.

Before continuing, it may be as well to ensure that the writer's description of a *Cypripedium* flower is clear to the reader, for orthodoxy has to some extent been sacrificed for the sake of simplicity. Looking, then, at a bloom (fig. 138) face to face we find a prominent dorsal sepal (D.S.) and two lateral sepals (L.S.S.), which are completely, or almost completely, joined together and situated behind the



direction and one inferior petal is converted into the lip (L.) or, as it is more commonly called, the pouch or sac. The column, a compound structure made up of the essential parts of the flower, presents at its apex a central, non-viscid stigma and, just below and behind that organ, two laterally placed fertile anthers. A third anther, modified into a petal-like structure (P.A.), overhangs the column and partially obscures it.

In favourable conditions *C. Calceolus* grows from 1 to 2 feet in height, and in May or June bears one or two flowers on a foliaged stem. From a perianth of red-chocolate projects a hanging pouch of clearest yellow, marked inside with orange lines. The beauty of the flower has been disastrous to the plant. Collectors have known no ruth. Extermination has been going on for hundreds of years. Hearken to JOHN PARKINSON, writing in 1629:

" . . . Mistris Thomasin Tunstall, who dwelleth at Bull-banke, near Hornby Castle . . . hath often sent mee up the rootes to London, which have borne faire flowers in my Garden."

To expect the ethics of Plant Conservation from one with such a name as THOMASIN is perhaps asking a little too much, but that she should have made a habit of destruction for the dubious delight of pleasing PARKINSON, old scrounger that he was, can only be spoken of as deplorable. The passing of THOMASIN, however, did little to check the depredations, and we find DAVID WOOSTER in 1873 gloating over the activity of a proprietor in the north of England who took "the precaution of plucking annually the flowers when in the bud, thus rendering it somewhat difficult to find the plant." ("Somewhat" cannot be described as an overstatement.) The practice of the proprietor, fortunately for the plant, is continued unto this day by the hand of his successor in conservatism. From Northern England *C. Calceolus* spreads fan-wise across Europe from Lapland in the north to Greece in the south, with Southern Russia as its eastern limit. Where *C. Calceolus* lays down the baton, *C. macranthon* (fig. 135) takes it up and carries it to the eastern fringe of Asia, a journey of 5,700 miles as the crow flies.

But the distribution of *C. macranthon* deserves more than passing notice. If a gigantic triangle were constructed having one angle in south-western Russia, another in Formosa, and the third on the eastern coast of mid-Kamtschatka, then that triangle would contain its geographical spread (see HULTEN, Flora of Kamtschatka, iv. 256 (1927)). Few better pictures than this could be given of the Glacial Period's effect on the dispersal of plants. Incidentally, the extraordinary extent of this Orchid's distribution also demonstrates that if, as many of us believe, the age of a genus is proportional to its latitudinal (lateral) spread, then not only must *Cypripedium* be one of the oldest genera of Monocotyledons, but the species *macranthon* its senior representative. Age, however, though it may call forth veneration, has never been an open sesame to popularity. *C. macranthon* has not enjoyed the centuries of admiration which surrounds

*C. Calceolus*. It does not, indeed, appear to have arrested the botanical eye until late in the eighteenth century, when THUNBERG saw it in Japan, but set it down as *C. Calceolus*. In 1800, however, Professor OLAF SWARTZ, of the University of Stockholm, saw further than THUNBERG and endowed *C. macranthon* with that unlovely name. It would be absurd to suppose that such a striking plant had never been noticed by the Cossacks, aye, and their predecessors, but so useless did it appear from any utilitarian standpoint, and so harmless withal, that those fighting farmers simply disregarded its existence. *C. macranthon* is perhaps the most compliant of the genus, though not, maybe, the most magnificent. Do not look upon this as adverse criticism. A *Cypripedium* may be beautiful without being the flower of the flock. At the end of a leafy stem from 8 to 18 inches in height a single flower appears in May or June. The pouch is large, narrowed at the mouth, slightly compressed from before backwards and of a soft carmine colour, whilst the remainder of the petals and the sepals are dull white, richly lined with purple-crimson. Fig. 135 shows how the dorsal sepal hoods the pouch. It would be curious if a plant of so wide a distribution adhered strictly to one flower pattern, and we are not surprised to find considerable variations. The dorsal sepal may be almost erect, the perianth segments darker or lighter, moving even to a creamy white in the var. *albidum*, or larger or smaller, and such differences are constantly found within a very limited area. Nevertheless, the contrasts are apparently sufficiently marked to have encouraged certain botanists to separate, e.g. *C. speciosum* and *C. ventricosum* from *C. macranthon*, whilst others, conversant with the latter's mutability, recognize in them but varieties. Further, the Himalayan so-called species, *C. Franchetii* and *C. tibeticum*, are regarded by those whose opinions are marked by breadth of view merely as modified outliers of *C. macranthon*.

Leaving the Old World, crossing the North Pacific and traversing North America to Ontario, we light upon that stately and handsome plant, so aptly named *C. Reginae* (fig. 136) by THOMAS WALTER in his *Flora Caroliniana*. In 1791, three years after its publication and also three years after its author's death, SALISBURY, doubtless in ignorance of WALTER's work, named the species *C. spectabile*. Though this is actually the order of precedence, the latter name has stuck and, regardless of the rules of nomenclature, gardeners have taken it for their own. It is doubtful whether more than three men in the land speak of *C. Reginae* without bethinking themselves. I, at least, am not one of them.

In moist, even swampy places, it is found from Ontario to Newfoundland and southwards to Georgia. On a foliate stem 1 to 2 feet high, from one to three flowers are borne in late June and July. The inflated lip is heavily suffused and lined with rosy-pink, otherwise the bloom is white. Of the Orchids mentioned here, this is perhaps the most exacting. Not so far as mere growth is concerned; it will endure extraordinary tortures; but its hesitancy to flower as it should

do, and as others do, is often exasperating. A constantly moist but well-drained loam in a half-shady position appears most to its taste. If, however, it does not entirely approve of your choice of situation, replant it in another. *Cypripediums* object to moving little more than *Irises* if taken up without removing the soil attached to the roots.

The genial *C. pubescens* (fig. 137) has been much more docile under my unskilled hands. It remains in the position where planted first, no small criterion of compliancy. From Ontario eastwards to Nova Scotia and in Nebraska, Minnesota and Alabama, according to BRITAIN and BROWN, it is found in woods and copses, and not uncommonly reaches a height of 30 inches in the wild. In cultivation, an insignificant foot is about the measure of its attainment. The flowers, one or two on each stem, open in May and June. From a frame of greenish-yellow segments, thickly lined with purple, and having as components lateral petals curled like the moustache of Mr. MANTOLINI, hangs a shining, golden pouch speckled with dull crimson near the orifice. Large it is, but not, like that of *C. japonicum*, disproportionately so. Now, if the truth be told, hardy terrestrial *Orchids* are often of a dullish hue, and backward in proclaiming their quality to the casual eye. Not so *C. pubescens*: the brilliance of the lip removes any danger of neglect. A group, even a small group, of flowering plants strikes you as would a field of buttercups; instantly, certainly. And closer acquaintance does nothing to dampen first impressions.

Many botanists and, curiously enough, American botanists at that, still persist in looking upon *C. pubescens* as identical with *C. parviflorum*. Similarity in geographical range and contemporaneous blooming perhaps encourage the idea. Sir WILLIAM HOOKER himself seems to have had doubts on the matter until May 1830, when he had an opportunity of seeing the two species in flower side by side. "However difficult it may be," he wrote, "to discriminate between them in the dried specimens, they were now at once to be recognised by the form of the labellum and the upper petal of the corolla" (*Bot. Mag.* lvii, sub t. 3024). Lest confusion arise, Sir WILLIAM's "upper petal of the corolla" is now distinguished as the dorsal sepal. To the gardener's eye, the great points of contrast between the species are that the lip of *C. parviflorum* is smaller than that of *C. pubescens* and more circular on transverse section. Further, the plant spreads less rapidly and appears less vigorous. It is, nevertheless, well worth growing. The general cultivation of hardy *Cypripediums* presents nothing of difficulty if healthy plants are obtained to begin with. The miserable objects one occasionally sees offered for sale—feeble, anæmic, more than half-way along the road to extinction—are useless for anything except warnings. From half to three-quarter shade, a well-drained and, if possible, moist soil and the avoidance of deep planting, will meet the requirements of the species described. The illustrations may serve to show that even the arid air of southern Essex is insufficient to entirely check their exuberance.

## CEDRUS ATLANTICA.

By Lady LECONFIELD.

"THIS cedar occurs in Algeria and Morocco. In the latter country its distribution is still scarcely known, though it was in Morocco that the Atlas Cedar was first discovered.

"PHILIP BARKER WEBB visited Tangiers and Tetuan in the spring of 1827 and from a native received branches of cedar which had been collected in the impenetrable mountains of the province of El Rif where there were said to be vast forests. Webb's specimens are preserved in the Museum at Florence where I saw them in December 1906. His discovery was published in an article by DE CANDOLLE in 1837. Dr. TRABUT states that the tree occurs in the mountains behind Tetuan : and it is supposed to exist to the south-east of Fez, where the traveller ROHLFS states that he saw Larch growing."

The above is a quotation from ELWES and HENRY, and shows how little was known about the forests of *Cedrus atlantica* in Morocco in 1906, when their standard work was published.

Since the War 1914-18—owing to the enlightened administration of the late General LYAUTEY—Morocco has suffered a complete change, and from having been a country of bandits in which safe and comfortable travelling was impossible, it is now flourishing and highly cultivated, and the marvellous military roads, coupled with the French genius as *hôteliars*, have produced a country in which travelling can be undertaken with a minimum of discomfort.

I met at Tangier an old Turk of over 70 who remembered taking in his boyhood three days to travel by caravan to Tetuan in the Spanish zone; this is now a comfortable afternoon's expedition from Tangier. To reach Fez it needed ten days, now accomplished in an easy day's journey by car.

I had long wished to see the great Forests of Cedar in the Atlas Mountains, and this spring, after a stay of some days at Marrakech, I moved on north to Azrou—a charming village in the Middle Atlas, where there is a most comfortable, entirely modern bungalow hotel, much frequented for winter sports.

I reached Azrou on the last day of March, and here, at 4,800 feet, found the back door of the hotel still littered with skis and luges, the snow having only just melted at that altitude. The following day, having hired a small Barb and a reliable guide, I set off for the higher ground where I was told there was a vast forest of cedars. We climbed up about 2,000 feet, chiefly by way of a dried-out watercourse, and so came suddenly on to an extensive undulating plateau with outcrops of



FIG. 139.—*CEDRUS ATLANTICA* IN THE ATLAS MOUNTAINS.  
Burnt stumps of Cedar and clumps of *Rosa* *sp.* in the foreground.

[To face p. 480.]



FIG. 142.—CORK OAK FOREST ON THE SLOPES BELOW THE MAIN CEDAR FOREST OF THE ATLAS MOUNTAINS.

large grey rocks. It was much the same sort of rough broken ground such as you may see in private parks like Alnwick in Northumberland, or Greystoke in Cumberland. As the snow was still lying in patches the deciduous plants were not yet in leaf, but the undergrowth consisted chiefly of a large rose species, *Cytisus Battandieri*, and various shrubby oaks. The cedars were truly magnificent (fig. 139). I measured some of the trunks which showed a girth of over 20 feet. Some specimens were low branching to the ground, and others growing straight up like Douglas Fir (fig. 140). Some again had branches growing horizontally for about 6-10 feet and then going straight up, a peculiarity of growth such as one sees in some old larches in England. There had been a serious fire at some time over this piece of ground, testified by unsightly dead stumps (fig. 139), and also by huge holes in some of the larger trees which had been surgically treated, in some cases nearly half the trunk having been cut away and tarred. This treatment, judging by the healthy appearance of the trees, seemed to be entirely successful. Young trees were growing profusely amongst the older ones, indeed in one or two cleared spaces the natural regeneration (fig. 141) made an effect very like that of any young plantation at home. The soil, unfortunately, I was not able to verify, as a lump of it—together with some samples of the rock—which I had carefully preserved in the vasculum to be analysed at home, was thrown away as rubbish by my Arab chauffeur at our next stopping place. The soil was reddish-brown, rather loamy, and appeared very rich, and the grey stone was pock-marked like tufa, though I have been unable to discover that the mountains in that district are volcanic.

We made a wide detour on the plateau, descending by another route, which led through a cork forest (fig. 142) interspersed with giant single cedars, clearings here and there being literally carpeted with the yellow low-growing *Raffinaldia primuloides*. This small plant is used by the Arabs for dye, and in one place, finding it had been dug up by the hundred, I thought some plant hunter must have been there before me. Beneath the shade of these corks and cedars is also the home of the mauvy-pink *Paeonia coriacea*, which, in the manner of *P. Cambessedesii* in Majorca, is usually found nestling against and growing through some other plant. For the Paeony I was prepared, but it was a complete surprise to find the ground beneath these cedars starred with *Romuleas* ranging in many shades from pink to blue. Peeping out amongst the cedar needles and cones they made a charming contrast to the patches of snow. It was a hot sunny day, and the smell of the cedars coupled with the fresh mountain air made me long to linger in this charming scene, but the call to a return to civilized life could not be unheeded, and I had to be content with this peep into a district I had long wished to explore, and register the determination to return there, God willing, in 1937, and make a further and more detailed acquaintance with the country and its trees and plants.

The illustration of the weeping form of this cedar (fig. 143) has been furnished by the kindness of Mr. BESANT, from the Botanic Garden at

Glasnevin, Dublin. The main stem is 30 feet high, when the leader bends over and has reached to about 3 feet from the ground.

It is said that the glaucous form of this tree is a chance occurrence, and I was able to confirm that it is so in these mountains. One or two trees I noticed had a distinctly glaucous colour on one side, the other side being natural green.

I brought home a good batch of cones, and am hoping to grow from them some young trees from the forest above Azrou.



## PLANTS TO WHICH AWARDS HAVE BEEN MADE IN 1936.

**Acidanthera bicolor var. Murielae.** A.M. September 15, 1936. From Mr. Amos Perry, Enfield. *Acidanthera bicolor* is a tropical African plant resembling in habit, and allied to, *Gladiolus*, but differing in its very long-tubed perianth with sub-regular limb. The present variety attains a height of 3 feet and produces a fan of erect, plaited leaves and a spike of six or seven large white flowers, opening in succession. Five of the six lanceolate, pointed perianth-segments are blotched at the base with purplish crimson.

**Beloperone guttata.** A.M. September 29, 1936. From the Director, Royal Botanic Gardens, Kew. A rare Mexican plant, requiring cool greenhouse treatment. It has rather weak, branched growths 2 or 3 feet tall, bearing soft, lustrous green ovate or elliptic leaves and drooping, terminal inflorescences. The insignificant, bilabiate, white flowers are closely arranged in decussate spikes, and are partially concealed by overlapping, heart-shaped, brownish-rose bracts.

**Chrysanthemum 'Elsie Hilder.'** A.M. September 15, 1936. From Messrs. Buckwell, St. Mary Cray. A useful early market and border variety producing handsome sprays of bright old rose flowers tipped with bronze. It was raised by the exhibitors as the result of a cross between 'Phoenix' and 'Shirley Pride.' The colour is uncommon in market varieties.

**Clematis Rehderiana.** A.M. September 15, 1936. From Mr. E. Markham, East Grinstead. A very vigorous climbing species from Western China, introduced to cultivation by E. H. Wilson. The large pinnate leaves have usually seven or nine broadly ovate, coarsely toothed or lobed leaflets. The fragrant creamy-white flowers are produced in large panicles which arise in the axils of the leaves of the current season's growth.

**Crataegus Arnoldiana.** A.M. September 15, 1936. From the Director, R.H.S. Gardens, Wisley. A North American tree with stout branches forming a broad, open head. The branchlets are armed with large, stiff spines and bear ovate, lobed, serrate, dark green leaves. Broad corymbs of conspicuous white flowers are followed by clusters of sub-globose, bright crimson fruits.

**Gentiana 'Devonhall.'** F.C.C. September 1, 1936. (Fig. 146.) From Andrew Harley, Esq., Blinkbonny, Kirkcaldy. One of the most outstanding Gentian hybrids in existence. The plant produces a large number of wiry, purple-tinged, prostrate growths with small, linear, dark leaves, each bearing at its extremity one erect flower of medium size. The widely-expanded corolla is light, clear, sky-blue, paler and marked with five longitudinal stripes near the base. The outside of the tube is nearly white, with narrow, triangular bands of light and dark green. The parentage of this very beautiful plant is *G. ornata* × *G. Farreri*.

\***Gladiolus 'White Triumphator.'** A.M. August 14, 1936. From Messrs. Hurst, London. Large-flowered type. Flower stems 6 feet tall; sixteen to eighteen flowers on a stem; flowers pure white with lower petal pale cream.

**Laeliocattleya × 'Elissa.'** A.M. September 29, 1936. An elegant flower having rose-purple sepals and petals, and an unusually large labellum of rich crimson. From Messrs. H. G. Alexander, Tetbury. Obtained by crossing *Cattleya* × 'Dinah' with *L.-c.* × 'Ishtar.'

**Laeliocattleya × 'Gatton Glory.'** A.M. September 29, 1936. An attractive flower with well-formed sepals and petals of deep golden-yellow, the wide labellum ruby-crimson. From Sir Jeremiah Colman, Bt., Gatton Park, Reigate. Obtained by crossing *L.-c.* × 'Canberra' with *L.-c.* × 'Mimosa.'

**Phygellus aequalis.** A.M. September 15, 1936. From the Viscountess Byng of Vimy, Thorpe-le-Soken. This uncommon South African species is a sub-shrub with flowering stems 2 feet in height. The leaves are ovate-lanceolate, irregularly serrate, the largest 5 inches long. The pendent flowers are carried in axillary cymes of seven to nine and have tubular buff-pink corollas with five triangular red lobes and shortly exerted chocolate-red stamens. It is stated by the exhibitor to be quite hardy and to grow well in both damp and dry places.

**Pieris ovalifolia var. lanceolata.** A.M. July 21, 1936. From Lionel de Rothschild, Esq., Exbury. A Western Chinese Ericaceous shrub with waxy-white, tubular, pendent flowers closely arranged in leafy, axillary racemes 3 to 4 inches long. The rich green, oblong-lanceolate, long-pointed leaves are half-evergreen. The specimen exhibited was raised from seed collected by Forrest, and bore the number F. 30956.

**Polygonum Reynoutria.** A.M. September 15, 1936. From Mr. Amos Perry, Enfield. A useful late-flowering herbaceous plant from Japan. It may be described as a dwarf, compact form of *P. cuspidatum*, and has stiff, branched growths 2 feet high bearing broadly ovate or orbicular leaves with undulate margins, and erect racemes of white and crimson flowers.

**Rosa holodonta.** A.M. September 29, 1936. From Lady Beatrix Stanley, Market Harborough, and the Rt. Hon. Earl of Stair, Stranraer. A member of the group of Chinese Roses to which *R. Moyesii* belongs. Although differing from that species in its pink flowers, the present plant is somewhat similar in appearance when laden with its flask-shaped, orange-red fruits. These are borne in clusters of from two to eight, and may be over 2 inches long.

**Virburnum betulifolium.** A.M. September 29, 1936. From G. H. Johnstone, Esq., Grampound Road, Cornwall. This Western Chinese shrub is one of the most ornamental of the deciduous species of *Virburnum*. The large, dense panicles of small, coral-red berries are

freely produced at the tips of short, lateral branchlets and are decorative for a long period. The ovate leaves are about 4 inches long, dark green above and paler beneath.

**Zygopetalum**  $\times$  **Blackii** var. 'Negus.' A.M. September 29, 1936. A distinct hybrid with an erect spike of four flowers. The sepals and petals are yellowish, heavily blotched with chocolate-brown; the well-displayed labellum is mainly violet-blue. From Messrs. Charlesworth, Haywards Heath. Obtained by crossing *Z. crinitum* with *Z. \times Perrenoudii*.

## THE AWARD OF GARDEN MERIT.—XXXVIII.\*

By F. J. CHITTENDEN, F.L.S., V.M.H.

215. ROSE 'MERMAID.'

*Award of Garden Merit, September 18, 1933.*

We not infrequently hear the remark made, not without a certain air of superiority, that florists' flowers (meaning varieties of plants raised in gardens) have far less permanence in horticulture than plants introduced from the wild—and if the term "hybrid" can also be rightly or wrongly attached, in the estimation of some the plants may be treated with contempt. This is, of course, not the attitude of the true gardener, who rises free of the shackles of conventional ideas and takes to himself the beautiful, no matter what its origin.

He might well retort that not a few wild plants are scarcely fit to admit within the garden hedge—would indeed make no little effort to exclude them. He would grant a certain lack of permanence for many garden-raised plants, and he could point out that the wild plants had already been through the rough and the tumble of the world, and were to a great extent free from comparison with new-born and untried relatives that might be better than they, whereas florists' flowers are always open to the suggestion that they are less good than the new, especially if one takes at face value the testimonials of their raisers, or indeed the evidence before their eyes at a horticultural show.

Hope comes and urges trial—old make place for new and new for newer—not always, and perhaps not often, to give lasting content. Sometimes memory wakes and discarded varieties are remembered with longing—then nurserymen's catalogues are scrutinized, often in vain, though perhaps in an old garden whose owner had great perception or a shorter purse, the old plant is found and with luck acquired.

With a few varieties, however, the urge to change is less acute and they gradually acquire a permanent place in the gardens of the many, as they speedily did in the deep affections of the few. No plants exemplify this better than Roses.

We have a few Roses—not only those around which legend has fashioned a charm—which, raised in gardens over a century ago, still

\* The notes on the first hundred plants to receive the Award of Garden Merit have been collected from our JOURNAL, vols. 47 to 53, and published as a pamphlet, price 1s. For subsequent notes see vol. 54, pp. 218 and 423; 55, pp. 121 and 276; 56, pp. 80 and 245; 57, pp. 65 and 354; 58, pp. 171 and 400; 59, pp. 131, 308, 360, 406 and 449; 60, pp. 89 and 545; and 61, pp. 94, 138, 225, 265, 298, 358, 393 and 443.

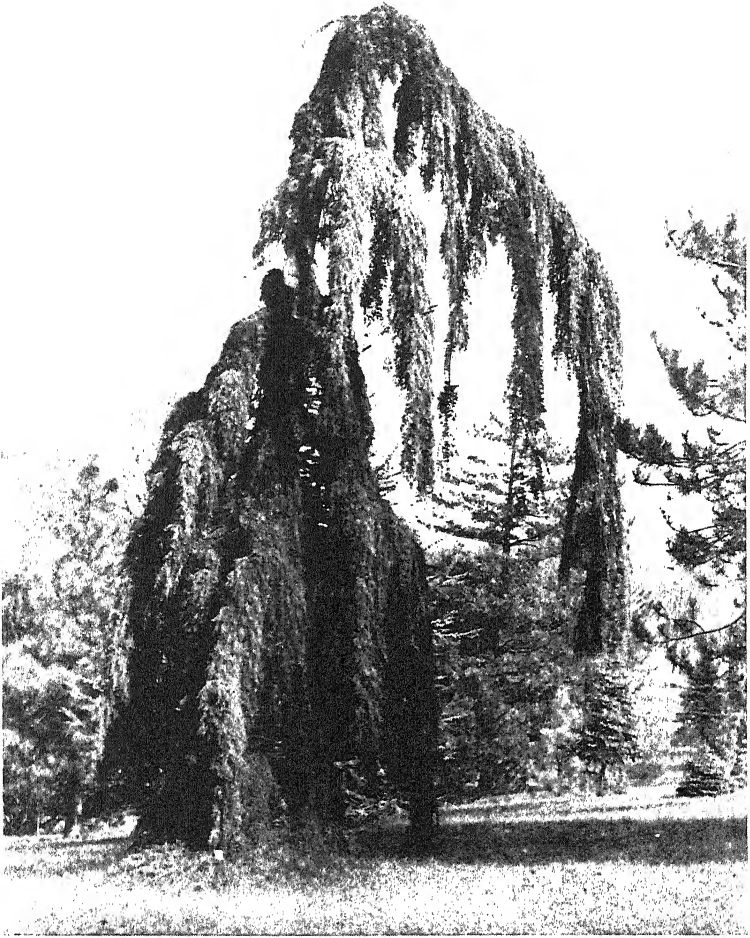


FIG. 143.—WEEPING *CEDRUS ATLANTICA* IN THE BOTANIC GARDEN,  
GLASNEVIN.

[To face p. 486.]

FIG. 144.—*SELAGO SERRATA* IN TEMPERATE HOUSE, WISLEY.

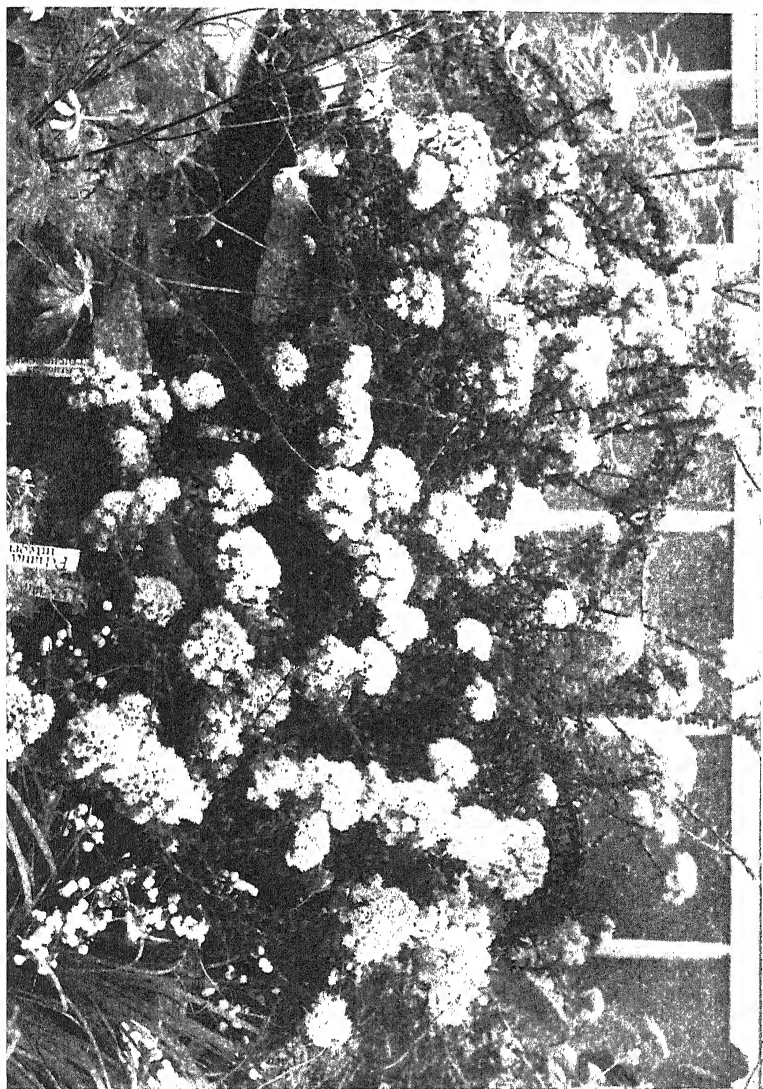




FIG. 145.—CYRILLA RACEMIFLORA AT WISLEY.  
A beautiful hardy autumn-flowering shrub.

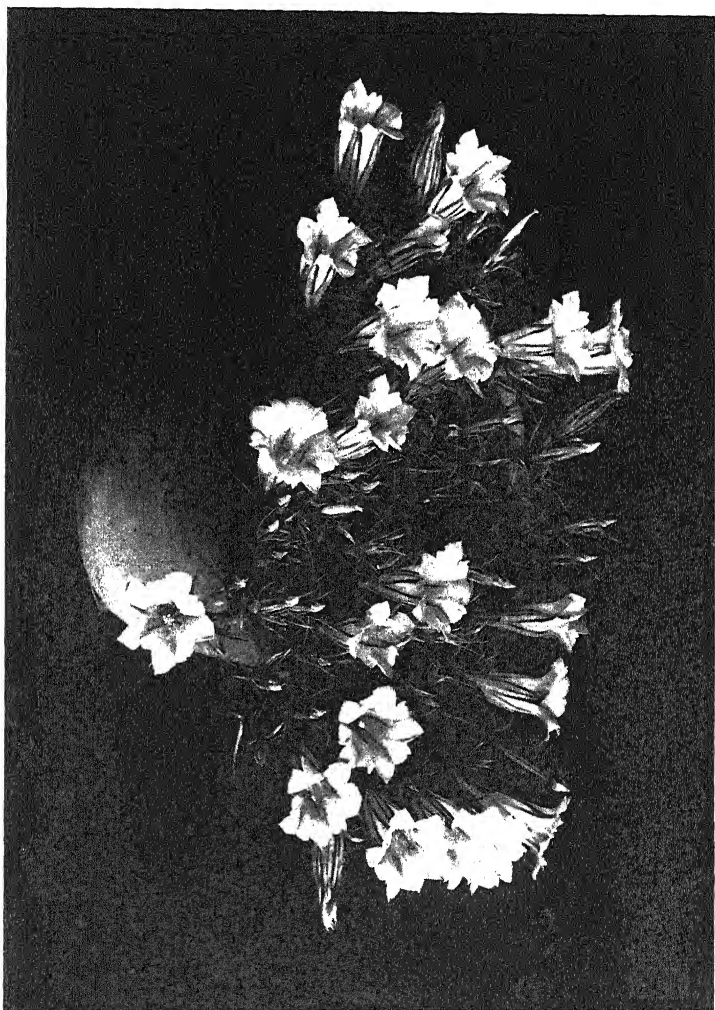


FIG. 146.—GENTIANA 'DEVONHALL.'  
(G. Farreri × G. ornata.)



retain a place, and some of more modern origin have gained such universal approval that they may be regarded—except by those who exclude all hybrids from their gardens—as indispensable. Rose 'Mermaid' is one, and it can only, by the rules that govern the Award of Garden Merit, be to such Roses as have attained a similar standing that this high Award falls.

Rose 'Mermaid' was introduced by Messrs. WILLIAM PAUL in 1917—a seedling raised by crossing *Rosa bracteata* with a double yellow Tea Rose. It received A.M. from our Society in that year and the Gold Medal of the National Rose Society, and was acclaimed the best climbing Rose of the year. All these judgments time has approved in a degree perhaps uncommon in Roses.

It is an ideal Rose for a west or south wall and, indeed, for any situation which is neither bleak nor exposed. It grows vigorously, has fine, nearly evergreen, glossy deep green foliage, and its long shoots are tinged with red. It needs little pruning—merely the removal of dead wood. It flowers from summer almost continuously till frost. Its single sulphur-yellow flowers, about 4 inches across, rendered more beautiful by the golden anthers, grow in clusters of about a dozen, and open one at a time.

Even if it were planted on every wall one would scarcely tire of it.

## GARDEN NOTE.

*The Flowering of Bamboos at Kew—Arundinaria nitida.*—I have examined the plants of this species in the Bamboo Garden at Kew and they show no signs of flowering, although some now look old. *A. nitida* was introduced from seed forwarded by BATALIN from St. Petersburg in 1889, who stated that it had been collected in North Szechwan by POTANIN. BRETSCHNEIDER (in Kew Bulletin, 1898, p. 316) pointed out that POTANIN, when questioned, had no recollection of collecting these seeds in China. It appears probable from BRETSCHNEIDER's letters that the seed was collected in South Kansu by BEREZOVSKI, who sent it to St. Petersburg in 1886. In that year all the bamboos in the vicinity from whence the seed was obtained flowered and seeded. The Chinese informed BEREZOVSKI that this bamboo flowers only once in a hundred years and that old men remembered having heard from their grandfathers how it flowered and seeded.

*Phyllostachys aurea.*—This Bamboo is now flowering in the Bamboo Garden at Kew, but only on a few culms in each clump. In one plant about two culms are flowering, whilst several young culms are growing up. Last year a few clumps flowered at Frogmore, Windsor, and others are flowering there this year. A note by Professor A. FIORI on the flowering of this species at Florence, Italy, in 1935, has appeared in the Nuovo Giorn. Bot. Ital. n.s. xlii. 463 (1935). There is also a note in the Gard. Chron., July 4, 1936, p. 14, by H. G. HAWKER, who states that it is flowering at Strode, Ermington, Devon. *Phyllostachys aurea* flowered last in England from 1919–1921, and GAMBLE gave a description of the plant in the Kew Bulletin, 1920, p. 217. Other recorded flowerings are 1904–1905 and 1876. Judging from the three most recent dates of commencement of flowering (1904, 1920 and 1936), this species should have a life-cycle of sixteen years, but there is no record of its flowering between 1876 and 1904 (28 years). [Several records of its flowering in England this year have been received.—*Ed.*]

*Phyllostachys nigra* flowered in this country from 1933–1935, and in Italy, France, United States and China. There are numerous records of its flowering during this period in French and Italian botanical and horticultural journals. Varieties of this species have flowered at different times, but there is no (true) record of a previous flowering of the typical variety. Mr. BEAN informs me that the plants which recently flowered were at Kew when he planted the Bamboo Garden about 1892. It was introduced into this country in 1827. KAWAMURA states that *P. puberula* (a related species) comes into flower at intervals of sixty years. If *P. nigra* has a similar life-cycle it should have flowered about 1876 and 1816.

*Arundinaria falcata.*—One clump flowered in the Bamboo Garden at Kew this year. Flowering specimens were also received from Glasnevin Botanic Garden in July 1936.—*C. E. Hubbard, R. Bot. Garden, Kew.*

## BOOK REVIEWS.

"Modern School Gardening." By C. E. Gurr. 95 pp. (Oxford University Press, 1936.) 2s. 6d.

This book is well printed and original in conception. Many of the experiments suggested are excellent. The book is illustrated with numerous line drawings and two plates.

Unfortunately, the diagrams of grafting and layering are misleading (pp. 74 and 50) and there are numerous inaccuracies and omissions. To quote a few: on page 30 Paris Green is mentioned for making poison bait for slugs and wood-lice. No word of warning is given of its poisonous nature or as to its unsuitability for use in a school garden. On page 34 Potash is said to *prevent* onion mildew. On page 65, dealing with "summer pruning," the tipping of *all* branches is recommended.

A whole chapter is devoted to the cultivation of roses, and only a small paragraph to hardy annuals.

Without these drawbacks, the book would be most useful.

C. E. HUDSON.

"Garden Decoration and Ornament." By C. A. Jellicoe. La. 8vo. 140 pp. (Country Life, London, 1936.) 12s. 6d.

One hundred and seventy-nine photographs are reproduced in this book, each with a short comment, e.g. "Fig. 24. Certain trees lend themselves to pollarding and thrive during the process. It is more customary to have pollarded limes abroad than in England, but this example from Gloucestershire shows what a delightful feature they can be in the English garden." In this instance the garden in which the view was taken is mentioned, but this is not always done. Garden seats, steps, paths, and other garden ornaments form the bulk of subjects.

"The Tropical Garden." By Loraine E. Kuck and Richard G. Tongg. 8vo. x x 378 pp. (Macmillan, New York, 1936.) 12s. 6d.

This is a very comprehensive book on gardening in the Tropics and caters for every kind of plant and tree. The chapter on "Lawns" is most useful, as a green lawn in a Tropical garden has always a great charm and is not easy to achieve. The cultural notes are good and the colour classifications at the end of the book should prove most helpful. There are many marvellous trees and shrubs that can be grown and the authors seem to have included all the best. Altogether this volume should be an excellent guide for anyone starting a garden in the Tropics.

Lady B. STANLEY.

"More Gardening Talks." By C. H. Middleton. 8vo. 256 pp. (Allen & Unwin, London, 1936.) 5s.

Mr. Middleton's broadcast talks on gardening matters have been enjoyed by many who will be glad to have them in a form which they can read at leisure. Advice on many problems, especially of the small garden, is given in homely language touched with humour. New gardens and old, camomile lawns and garden rubbish, verbenas and rats, fruits and vegetables, garden catalogues and climbers—you may find hints on them all, and on many more. We may not agree with all the advice given but it is given in such a kindly fashion that it will command our attention and stimulate our thought.

"How Allotments could be made an Amenity Asset to the Community." By Lady Allen of Hurtwood. 8vo. 22 pp. (Housing Centre, London, 1936.) Paper cover, 3d.

We are all, alas, familiar with the unsightly shacks and their haphazard distribution which so often mar the appearance of groups of allotments. Many believe this unpleasant state of affairs could cease, and the benefits of allotments might be enjoyed and no one's sight need be offended. This little pamphlet points a way.

"Modern Garden Craft: a Guide to the best Horticultural Practice, Private and Commercial." Ed. by A. J. Cobb. 3 vols. La. 8vo. xi x 205; xi x 226; ix x 229 pp. (Gresham Publishing Co., London, 1936.)

The three volumes comprising this well thought out and well produced book are intended rather to supplement than to supplant the "Gardener's Assistant," which has for so long held an honoured place in the library of the gardener. It aims to do this by means of a series of essays by experts in their particular lines, detailing modern practice in their special spheres. Volume I has essays on Garden Design, Garden Making, Making of Lawns and Sports Grounds, the Properties and Management of Soils, Modern Fruit Culture, Trees and Shrubs. Volume II deals with the Flower Garden with subsidiary essays on Roses, the Herbaceous Border, Annuals and Biennials, Dahlias, Irises, Lilies, the Modern Rock Garden, Wall Gardens and the Water Garden. Volume III comprises essays on the Greenhouse, Diseases and Pests, Commercial Cultivation of Vegetables, Fruit Growing, Glasshouse Work, Tomato and Cucumber Growing, Mushroom Growing, and Bulb-growing, concluding with Exhibitions and Exhibiting, and the Florist's Art.

It will be seen that the work covers a wide field, but by no means all the ground required in an ordinary private garden—vegetables for the private garden being almost omitted. The greatest advance in vegetable growing is probably in the varieties offered, and a critical appreciation of the newer varieties available for private gardens would have been valued by a great number of gardeners. So, too, would a similar comment on the newer fruits. There are many that should take a place in any new garden, and replace old ones when occasion arises in established ones, but we find no guide to this; and in a book such as this we might have expected some details of the particular treatment certain varieties of fruits call for, but for that we look in vain—we find not even a warning that all apples, for instance, should not be treated alike.

Not all sections of the work are open to similar criticism—far from it—and several embody the results of the latest investigations in an extremely practical fashion.

The book is printed in readable type on good paper and the illustrations are, for the most part, excellent. The coloured pictures, however, suffer as usual from the poor treatment of the green tints, which are either too yellow or too leaden.

"Fifty Years of Field Experiments at the Woburn Experimental Station." By Sir E. John Russell and Dr. J. A. Voelcker. 8vo. xvii x 392 pp. (Longmans, Green, London, 1936.) 21s.

This account of the experimental work at the Woburn Experimental Station founded in 1876 by the Duke of Bedford and the Royal Agricultural Society is naturally concerned with agricultural crops and stock. There is thus little of direct horticultural interest though much of suggestion to be gathered from the results detailed. The variable results of green-manuring are particularly interesting and need to be followed up since green-manuring or some modification of it must needs be resorted to in the future.

## NOTES AND ABSTRACTS.

**Begonia socotrana.** By T. H. Everett (*Addisonia*, t. 630; July 1936).—Introduced in 1880 by Sir I. B. Balfour, the parent of many winter-flowering hybrid Begonias, this bright red species is itself worth growing. It needs a warm greenhouse and flowers in December, remaining dormant thereafter until August.  
F. J. C.

**Callicarpa**, Monograph of the genus, as it occurs in America and in cultivation. By Harold N. Moldenke (*Fedde, Repert., Sp. Nov.*, xxxix. 288–317; xl. 38–131; 1936).—This paper describes in detail, with particulars of synonymy, geographical range, local names, etc., the 28 species wild and one (*C. dichotoma*) naturalized in America and the 14 species which are or have been in cultivation; a key, largely based on leaf characters, is given to distinguish them.—W. T. S.

**Cyrilla arida.** By J. K. Small (*Addisonia*, t. 631; July 1936).—A comparatively new species of *Cyrilla*, described in 1924 and now introduced to cultivation from dry sandhills in Florida. The better-known *C. racemiflora* grows in moist soil. A shrub or small tree with glabrous evergreen leaves clustered at the ends of branches and raceme-like panicles,  $1\frac{1}{2}$  to  $2\frac{1}{2}$  inches long, of white flowers in late summer. The botanical characters depended upon to distinguish this species are not pointed out.—F. J. C.

**Epigaea repens**, propagation of; cuttings and seeds. By Florence L. Barrows (*Contrib. Boyce Thompson Inst.*, viii., No. 1. 81–98. Jan.–March, 1936).—Cuttings taken at the end of August were inserted in four different media, in which the rooting percentages were as follows: Peat moss, 100 per cent.; Connecticut soil, 95 per cent.; peat moss and sand, 92 per cent.; and live *Sphagnum*, 85 per cent. Newly potted cuttings survived the winter much better in a greenhouse than in a cold frame. The flowers are often dioecious. Hand-pollinated flowers gave a range of seeds per capsule from 177 to 616; by natural pollination from 29 to 415 seeds. Germination was from 0.3 per cent. (an exceptional case) to 87.3 per cent.; average of 4118 seeds, 40.4 per cent. Fruits ripen naturally about the end of June, but slightly better germination was obtained in two lots of seeds not sown until September. December and January sowings resulted in a greatly decreased germination. An acid soil, constant moisture (this appears particularly important), and shade for at least part of the day are indicated by the environmental conditions of the species in a wild state.—B. O. M.

**Eriaceae, americanae novae vel minus cognitae.** By H. Sleumer (*Notiz. Bot. Gart. und Mus. Berlin-Dahlem*, Nr. 117 (Bd. xiii.), 206–214, July 1936).—Four plants, previously placed in the genus *Pernettya*, are transferred to *Gaultheria* and become respectively *G. alpina* (Donn, Sm.) Sleumer; *G. nubigena* (Phil.) B. L. Burt et Sleumer; *G. phillyreaefolia* (Pers.) Sleumer; and *G. tenuifolia* (Phil.) Sleumer. The last has also been known as *G. elegans* (Phil.) Reiche. In *Pernettya*, *P. linifolia* (Phil.) is reduced to varietal rank as *P. prostrata* (Cav.) Sleumer var. *linifolia* (Phil.) Sleumer, and is described as an extremely small-leaved form with leaves only 1–1.5 mm. wide.

**Leucothoe.** A key is given to distinguish the six sections of this genus, three of which are new divisions, namely; *Oligarista*, containing the Asiatic species *L. Griffithiana* C. B. Clarke and *L. tonkinensis* Dop.; *Megarista*, with *L. Keiskei* Miq.; and *Zenoea*, including *L. Grayana* Maxim. and *L. Tschonoskii* Maxim. The last three species are all natives of Japan.—B. O. M.

**Lilium taliense** Franchet. By J. Comber (*Gard. Chron.*, c. p. 78, Aug. 1936).—A record of the first flowering of this Lily in the gardens at "Nymans," Handcross, Sussex, in 1935. Raised from seeds collected in China by Forrest, No. 28602, the tallest plant in 1936 attained a height of over 4 feet and carried seven flowers. Identified at Edinburgh Royal Botanic Gardens by Prof. Sir W. W. Smith. There is a photograph of the plant in the 1936–7 catalogue of Mr. W. A. Constable, Lily Specialist, of Southborough, Tunbridge Wells, page 92, which was taken at "Nymans" in 1936.—B. O. M.

**Lupinus nanus.** By E. J. Alexander (*Addisonia*, t. 629; July 1936).—Introduced to England by Douglas a hundred years ago from California, this neat blue-flowered annual is well known in cultivation.—*F. J. C.*

**Mint Rust.** By L. Ogilvie and P. W. Brian (*Ann. Rep. Agric. & Hort. Res. Sta., Long Ashton, Bristol*, 1935, pp. 115–117).—These authors found that by immersing dormant “runners,” subsequently used for forcing in greenhouses during the winter, in hot water for ten minutes at a temperature between 105° and 115° Fahr., the rust (*Puccinia Menthae*) was completely controlled. Washing the “runners” with cold water reduces the infection slightly. A note on the subject also appeared from the same source in *Gard. Chron.* xcvi, 65 (July 27, 1935).—*B. O. M.*

**Prunus communis var. Pollardii** (*Gard. Chron.*, c., pp. 96–8, Aug. 1936).—A letter from Mr. Collingwood Ingram shows the origin of this fine variety (it received a First Class Certificate in London on Feb. 19, 1935) to have been in Ballarat, Victoria, Australia, where it was raised by Mr. Pollard about 1904 and distributed by the firm of R. U. Nicholls & Co. The parentage is not stated, but Prof. Mario Calvino of San Remo, the author of the letter, considers it to be a hybrid between Peach and Almond, “because it is similar to the hybrids obtained in the U.S.A. by Mr. Clayton O. Smith.”—*B. O. M.*

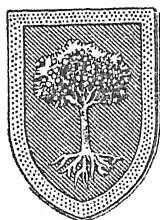
**Salix × Meyeriana** Rostkov. By W. A. Sprott. “New Light on a pentandra hybrid Willow.” (*Jour. Bot.*, lxxiv. No. 884. 230–233. Aug. 1936).—This hybrid between *S. pentandra* and *S. fragilis* was for long thought to be spontaneous in England only in the neighbourhood of Shrewsbury, where the plants were all female. In 1934 the author also discovered the same hybrid, but of male sex, in the Eden valley in Westmorland, where the trees grow to 25 feet in height. In both localities the parents are common, and their progeny is said to be “one of the most magnificent Willows found in the British Isles.”

A description of the male form is given, while a footnote by the Editor states that there is a dried specimen of the latter in the Herbarium of the British Museum, collected by Praeger in Co. Kildare in 1896.—*B. O. M.*

**Vriesia Duvaliana.** By E. J. Alexander (*Addisonia*, t. 602; July 1936).—Native of Southern Brazil and needing a moist warm house, grown in a mixture of *Osmunda* fibre and *Sphagnum*, this species remains moderately showy for about three months. The bracts form a dull red spike about 8 inches long, the green flowers being almost hidden among them.—*F. J. C.*

# JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

Vol. LXI



Part 12

December 1936

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## GRAPES FOR A SMALL GARDEN.

By F. J. ROSE, F.R.H.S.

[Read October 6, 1936; Mr. C. G. A. NIX, V.M.H., in the Chair.]

WHEN the Council invited me to give a paper on "Grapes for a Small Garden," one of the first thoughts that occurred to me was, What is actually meant by a "small garden"? I eventually came to the conclusion that the words meant a garden where there were only one or two houses in which Grapes could be grown and where other plants besides Grapes must find a home. There are some large gardens where this would apply—for instance, Townhill, of which I have charge, can boast of only two quite small vineries which are not devoted entirely to Grapes, and I am sure there are other similar gardens in the country. But more often it is in the garden where there are only one, two or three gardeners kept that the head gardener has to do his best to produce a crop of good Grapes besides other subjects in the same house or houses.

There are many small gardens where one particular branch of our profession is a speciality. It may be vegetables, Sweet Peas, Roses or Chrysanthemums—it is very seldom Grapes. One exception, however, comes to my mind when I think of those two beautiful bunches of 'Muscat of Alexandria' which are brought annually to Shrewsbury Show by Mr. PRICE of Tan-y-Bryn Gardens, Abergele. I do not know how many years Mr. PRICE has won the Muscat Class at this great Show—certainly ever since I have been going there—about ten years; and I wonder if two finer bunches have ever been seen at a Show than those brought by our old friend this year, and this in spite of the almost

annual lament of the Gardeners' Chronicle that "Grapes at Shrewsbury are not what they used to be."

I have a great admiration for the single-handed gardener, probably because during the early part of my life my father was one—his knowledge of the actual growth of a plant may be, and probably sometimes is, better than those of us who have larger responsibilities. One may often find a keen mind and a great love of the work in a small garden. I have in mind one who lives not far from me in Hampshire. About eighteen months ago, when the Rhododendrons and Azaleas were at their best, his employer took him to see one of the Show places in our district. When they got home the gardener asked if he could have the next day off—a request which was readily granted, but the employer said, "Why do you want a holiday now?" This was the reply: "Well, sir, I should like to sit down and think for a bit."

All would agree that those in charge of small gardens cannot hope to compete in the cultivation of Grapes generally with their more fortunate colleagues who have charge of gardens where there are whole ranges of vineries. I am not sure I am strictly correct in saying those in charge of large gardens are the more fortunate—some of my friends may disagree. It so often happens that the owner of only one or two vineries wishes and expects his gardener to grow all the best varieties of Grapes in those houses, whilst those who have a range of houses are able to group together those varieties which they know from experience will do well under similar conditions. But this is a point I will deal with later.

The views I propose to express in this paper are from my own personal observation and experience. I have never read a book on Grape-growing in my life, and I have read very few articles on the subject. Many of my friends have seen the Grapes growing at Townhill, and others at the various Shows, and I can only refer you thus in support of the methods I propose now to expound.

To begin with—had I the choice—I would select a span-roofed house for the work, but this is seldom seen in a small garden and I need mention it no more. In the cause of economy it is usually a three-quarter span building or a complete lean-to which is used to house the vines. The three-quarter span is by far the better as it allows considerably more light in the house, and full light is essential, and it also allows a better circulation of air. Both lean-to and three-quarter span houses should, of course, face due south. Sufficient hot-water pipes should be installed to keep the temperature sufficiently high and a buoyant atmosphere. This should be accomplished with the pipes moderately warm. On no account should it be necessary to get the pipes so hot that one cannot bear one's hands on them. If it should be necessary it is a definite proof that there is not sufficient hot water piping in the house. As a rough guide I estimate that a house 30 feet long by 14 feet wide would need three 4-inch pipes, which should extend not only along the front but also along the walk or back of the house. If the boiler has to heat more than the vinery, then there



should be a valve attached, so that the heat can at any time be shut off from the vines.

In these modern days when many or most people are obsessed with the idea of saving labour it is small wonder that some attention should be given to the heating of glass-houses, and oil heating of boilers with a thermostat to regulate the temperature has been introduced and is now in use in some gardens. I have had no experience of this and can pass no real opinion. I can only say that I have spoken to a man whose houses are heated in this way and I have seen the Grapes produced. The only comment I pass is that I shall be content to remain old-fashioned. If my friend is here to-day, or if he should see a copy of this paper, I feel sure he will not mind me passing that comment.

But apart from these remarks on heating, let it be understood that I do not wish to decry any introduction that may be of assistance to the gardener. I appreciate the great strides that are being made in the way of machinery in all its various forms both for the garden and the farm, but both gardener and farmer, if experienced, will probably agree with me that though these introductions may be of great assistance, it is the human element that is the real deciding factor.

I will now pass on to the preparation for, and planting of, the vines. To grow good Grapes, and that is our object even if the garden be small, I recommend both inside and outside borders. I admit it is possible to grow good Grapes with an outside border only. It is possible also to grow Grapes with no prepared border at all, but simply planted in the ordinary soil, but your soil must be of a medium or light texture, and though I cannot speak from experience, I certainly should hesitate before planting in the ordinary garden soil if it were of a heavy and retentive nature. If the owner of a small garden prefers to grow only White Muscats, then I recommend an inside border only, for the White Muscats are the most delicate of Grapes and require heat to finish them well.

But to return to our inside and outside borders. With a moderate-sized house the borders would be about 9 feet in width. I would excavate to a depth of 3 feet at the front, and it would slope to 3 feet 6 inches at the back. This would allow a 3-inch covering of concrete, and drainage of broken brick and clinker 6 inches in front to 1 foot at the back. Provision should be made to drain all surplus water away outside the house to a sump hole or drain. The vines are planted inside the house and the roots penetrate to the outside border by means of arches in the front wall under the ground. Provision should be made for these when the house is being built. I prefer to stop these arches up till the inside border is first filled with roots, which should take from four to six years. Then open up the arches and let the roots outside, and finally after a number of years, if the surrounding soil is suitable, knock some holes in the front wall of your border and let them go where they like. This method I have practised

at Townhill, and the only fault I find is that some varieties grow too strong—'Mrs. Pince' in particular.

I may observe in passing that I am aware that in a small garden a variety of plants must be grown in the same house, and an inside border may become too wet by the drip of water from the plants, especially in winter, but the good gardener will provide against this. In recommending an inside border I have in mind the growing of good Grapes.

Assuming the border inside to be 9 feet in width, I would first build a wall of turf and fill in only 3 feet the first year. If the vines should grow satisfactorily add another 3 feet the second year and finish filling in the third year. This will be found more satisfactory than completing the border the first year.

The formula I would recommend for the border is as follows : Good loam, *i.e.* the top 4 to 5 inches of a good pasture, 10 parts ; good short manure, preferably from a stable, 2 parts ; good English  $\frac{1}{2}$ -inch bones, 1 part ; old mortar rubble, 1 part ; wood ashes, 1 part ; and if the last contains no charcoal I would add some in the form of charcoal nuts.

I prefer to raise my own canes for planting from eyes, but this is not always possible, and any of the leading fruit nurseries would supply canes at a reasonable cost. I would strongly advise planting canes only one year old. The nurseryman may press you to plant so-called fruiting canes 3 years old, but do not be misled—the younger canes will get away much better and will make much the better rods. The canes should be planted 4 feet apart and the roots well spread out when planting. It is best to plant just as the buds are swelling up in the spring, and the canes should at the time of planting be cut hard back.

We now come to varieties, and at the outset let me emphasize that I do not recommend planting White Muscats in the same house as black varieties. One can certainly grow them, but the amount of air so necessary to the black Grapes during the ripening period will not suit their white cousins ; they will become spotted even if they do not shank, and will certainly not obtain that beautiful amber colour so prominent in those shown by Mr. McINNES and Mr. PRICE. I have tried it by planting the 'Muscats' at the warmer end of the house and by keeping the front ventilators at that end almost closed, but even then they do not attain the same standard of quality as the black ones. If it is especially desired to grow some 'Muscat of Alexandria' with such varieties as 'Black Hamburg' and 'Madresfield Court,' I would recommend first grafting the Muscats on to 'Black Hamburg.' The 'Black Hamburg' being of a hardier stock will give increased vigour and hardiness to the Muscat, with better results. But even if so grafted the 'Muscat of Alexandria' really needs a higher temperature to finish it.

I do not intend to bore you with a long list of varieties—to be quite frank, I do not know very many. I am going to assume again that the

small garden has two vineries—one early and one late, and both black and white Grapes are wanted. For the early house I would recommend a selection from 'Black Hamburg,' 'Madresfield Court,' 'Muscat Hamburg,' 'Appley Towers,' 'Foster's Seedling' and 'Buckland Sweetwater.' For the late vinery a selection from 'Mrs. Pince,' 'Gros Maroc,' 'Alicante,' 'Mrs. Pearson' and 'Golden Queen.'

Now for a few words about each. 'Black Hamburg' is universally known and grown, and needs no further recommendation from me. 'Madresfield Court' is the best of all black Grapes with bunches unusually large, berries large and of excellent flavour. But it is not one of the easiest to grow. Owing to its very thin skin it is very susceptible to variations of temperature and atmosphere. It must have plenty of air during the ripening period or the berries will split. It also must have a somewhat dry atmosphere during this period or the berries will damp. The season of 1936 has been one of the worst in my experience, at any rate for us in the south. We southerners are usually credited with having ideal climate for everything, but possibly our colleagues in the Midlands and North have scored over us this year, at any rate as far as 'Madresfield Court' Grapes are concerned. I had one of the best lots I have ever seen up to the time of ripening. Then we had rain day after day which proved too much for them, and in the end they were disappointing. Of course we get used to this sort of thing in the gardening world. All the 'Madresfield' I have seen this year have been below standard. To do really well they ask for a house to themselves, and I have proved this from experience. In comparison my late employer described all other black Grapes as water-bags, and my present employer would be well satisfied if I grew no other variety.

'Muscat Hamburg' is another first-class Grape with moderate-sized bunches and berries of excellent flavour, but needing a little higher temperature during the ripening period than the 'Madresfield Court.'

'Appley Towers' is a strong grower, with medium-sized bunches and berries, but of only moderate flavour. It is easy to grow and easy to finish.

I will rope 'Buckland Sweetwater' and 'Foster's Seedling' together—two white varieties of fair flavour, with rather small berries, and fairly easy to grow. I have not troubled about them for some years, and unless one particularly wanted white varieties I would not press a small grower to plant them.

In the late house 'Mrs. Pince' would be the best. It is described as a black Muscat. It has large bunches, medium berries of excellent flavour, which owing to their thick skin will hang and keep well. For years I had particularly good grapes of this variety from the two rods I have, but for some four years now they have grown so strong that the flowers will not shed their caps, and in consequence the fruit has set badly. I have now left off giving them any manure, and I think I am overcoming the difficulty.

'Gros Maroc' has smaller bunches, much larger berries, of only moderate flavour, will keep well and is easy to grow.

'Alicante' has large bunches, medium-sized berries, is easy to grow but of only moderate flavour.

'Mrs. Pearson' is a very fine white Grape—bunches large, berries medium sized and round—a very fine-flavoured Grape which will hang and keep well. It grows particularly well with me in a mixed house.

'Golden Queen' has larger berries, but the bunches are smaller. It will colour better than 'Mrs. Pearson' and will keep very well. I have not grown it for some years, and it is not very often seen. Nevertheless, if white Grapes are required it is worth planting.

If the smaller grower made his selection from the varieties I have mentioned I do not think he need trouble about others. If he has only one house he could very well make a selection from those I have mentioned for both early and late work.

It is often said that it does not pay to grow Grapes in this country; they can be bought so cheaply. It was a stock phrase of the late Lord SWAYTHLING, when he was showing his friends round the garden, "Of course I can buy Grapes cheaper than I can grow them. I put these houses up just to please Mr. ROSE." To this I had a stock reply that so many other subjects were grown in the houses that Grapes had deteriorated to the status of a catch crop, and their only cost was the small amount of labour put on them. It is true, of course, in these days of quick transport and cold chambers, that Grapes can be bought cheaply. But those offered cheap are usually of inferior quality. Go into a shop and ask for 'Madresfield Court,' 'Mrs. Pince,' or first-class 'Muscat of Alexandria' and if you can buy them at all, you will find they are *not* very cheap.

Some of you may have heard the story of the Australian in London from one of the fruit-growing districts of Australia, where Peaches are 1*d.* each and Grapes about 2*d.* per lb. He went into a shop and asked the price of Peaches and was told 2*s.* 6*d.* He thought that was for the whole box, and said he would take them. The assistant then explained that 2*s.* 6*d.* was for only one fruit, and not caring to leave without buying something, the man said he would take three and tendered a 1*os.* note in payment. The assistant duly brought back the fruit and offered the half-crown change. But the Australian said, "Don't trouble about that, for I think I trod on a grape as I came in."

I now come to the general management of the vinery, and let me remind you here of what I said at the beginning of this paper. I have never read much about the cultivation of Grapes, and my methods may be quite unorthodox and open to severe criticism. During the first year very little heat should be employed and the vines should be allowed to make as much growth as possible. Special care should be taken to ensure that the border does not become dry, for the grower is now laying the foundation for many years of what should be good crops of Grapes. Should the border become dry the main roots will

probably go down, and one cannot get good returns if the roots are too low.

In December, when growth has finished and the leaves fallen, the vines should be cut back. Do this as early as possible or they may bleed. If growth during the first year has been good then your canes may be cut to about one-third of what the total length will eventually be. During the second year spurs will begin to be formed on the previous year's wood, and the grower should aim for these to be about 18 inches apart and alternated on each side of the rod. He may not get this exactly, but he can get near it.

Beyond the spurs now being formed growth should be allowed as advised for the first year, but by now the vines may be so vigorous that some check on the growth may be necessary. This method should be continued till the vines have attained their full length, usually the third year from planting.

The gardener may take two bunches of Grapes to each vine the second year, about six the third year, and thereafter the crop is at his discretion. If he uses his discretion wisely he will be careful not to overcrop. He may carry fourteen or even more bunches to a vine, but he will not get the quality he would if he were satisfied with only eight to ten to each rod. I have never troubled to weigh them, but I believe there would be little difference in the actual weight of the eight to the fourteen—the great difference would be in the larger berries and good finish of the former.

My method of stopping is as follows. Given normal growth, stop the shoot at the second leaf beyond the bunch. Take out all sub-laterals from the base to the bunch, and thereafter continue to stop at the first leaf. Normally this is sufficient till the Grapes are ripe, but it is not a hard-and-fast rule. Should there be very strong growth it may be necessary to take the shoots out completely instead of stopping at the first leaf. Again, if growth is thin and weak allow them to grow more. Also I would advocate a little less foliage for the white than for the black varieties.

Thinning the Grapes is a job that calls for a good deal of intelligence. The man entrusted to the work should know each variety individually and thin accordingly. He should visualize in his mind's eye the size of the berries when fully grown and leave them so that they touch but are not unduly crowded. Obviously the large-berried kinds need more cut out. It is not such a soft job as it sounds. I have been thinning Grapes for a good many years and even now I make mistakes, but, as I said, it needs some intelligence, and so some may say these mistakes of mine must be obvious. Aim always at cutting out the under berries and taking practically all from the centre of the bunch. Very little thinning will be necessary on the top of the bunch, for it will be seen they have more room in which to swell there and when finished the tops of the bunches should be well furnished. No one can thin Grapes properly at only one attempt. When the berries are about half-grown he must look over them again, taking care to cut out all

seedless ones. He will also probably find some to cut out even at the third attempt. Generally speaking, I would thin the white varieties somewhat harder than the black ones, for light is a deciding factor in the colour of these, and light cannot penetrate if they are too crowded. Bad thinning is frequently seen at Shows, and for this reason at one of our recent big Shows I thought the judges were over-generous in their pointing. Some were thinned so badly that had I been a judge, I should have given them only about three points out of the possible ten instead of the six or seven they actually received.

We now come to ventilation of the houses—I believe every man is gifted for a particular job in life. It may be as a banker, or statesman, an engineer, a bricklayer or a humble gardener, and the ideal gardener is born and not made. So it is that when a good gardener enters a house he knows at once what ventilation is necessary, if any, just as a good doctor can diagnose the ailment of a patient as soon as he sees him. But unfortunately we are not all such good gardeners and we must resort to thermometers. Thermometers are, of course, an absolute necessity for young men in the training.

For the first year I would employ but little fire heat and would keep the house to just a comfortable growing temperature. For the following years I assume we will close and start our early vinery into growth about the middle of February, and our late house about the middle of March. If there is only one house close it about the end of February. I would admit very little air till the buds have swelled ready for bursting into growth. Then admit a little air when the temperature has risen to about  $70^{\circ}$ , gradually increasing it as the temperature rises till it reaches the maximum, and in the afternoon begin to reduce the air as soon as the temperature begins to fall, finally closing the house early to retain some sun heat. Later on in the year when the Grapes are growing, and during the stoning period, *i.e.* about six weeks from flowering, begin to admit air as soon as the temperature reaches  $65^{\circ}$ , and from this time one should reduce fire heat to a minimum. I can give you no definite rule as regards fire heat, so much depends on the weather; but I strongly advise you, for the black Grapes in particular, to use as little fire heat as possible. Years ago a gardening neighbour of mine—Mr. MITCHELL of Chilworth Manor—used to show magnificent Grapes at Shrewsbury, the R.H.S. Hall and other big Shows throughout the country. I have never seen better Grapes than he grew. He had one boiler just for his three-quarter span vinery, and he used to light the fire up every evening during the summer, bank it up and not go near it again till the next evening, when he did the same again, and so on.

No front ventilation will be necessary till the Grapes have reached the stoning period, and then only sufficient to keep a circulation of air till they begin to ripen. Then gradually increase it according to weather. I can imagine that if the uninitiated are reading this paper they will be thinking what a difficult and complicated business it is to grow a few Grapes. It is not really. It is a simple matter, but

in speaking it always sounds more difficult. One could make a paper on potato growing sound almost as complicated.

During the flowering period it is well to keep a somewhat drier atmosphere in the house. Some growers advise keeping the house perfectly dry, but this is unnecessary, and I should always damp the floor of the house during the afternoon of a bright day. During this period, too, tap the rods occasionally to distribute the pollen, and use a rabbit's tail on the bunches lightly during the middle of the day. If you fail to obtain a good set in this way try syringing the bunch when they are in full flower. Do it in the morning of a bright day so that the bunch will be quite dry before midday, and use plenty of force.

I must now spend a few minutes on pests. Vines have their share as every other class of plant. Of these pests Red Spider is undoubtedly the most troublesome. Should you get an attack you will find it impossible to get rid of it that season, and so it is by far the best to prevent it as much as possible. To do this one must keep a moist and genial atmosphere during the early and mid-season of growth: be careful that the vines receive no check either by bad ventilation or by other bad treatment, such as becoming dry at the roots, etc. There are two ways of checking an attack of Red Spider during the growing season should a gardener be unfortunate enough to get one: (1) By the use of the hose, using as much force as possible; (2) by sponging the leaves with an insecticide. The hose treatment will, of course, take the bloom from the Grapes and render them unsightly. Sponging is a difficult, tedious and slow job, but either of these methods may be the means of saving a crop of Grapes. A simple method of prevention I have adopted for many years is this: Immediately the Grapes are set, spray the leaves all over with a weak solution of sulphur and water. Mix some ordinary flowers of sulphur into a paste, put in a bucket of water and then spray the vines over. Do the work on a bright morning, and when the leaves have dried it will be seen they are covered with a thin film of sulphur. It will not mark the Grapes and it will go a long way to prevent spider. Plain sulphur will not mix well with water and one must keep it stirred whilst another sprays with a syringe or pump.

Thrips sometimes causes some trouble, but it should not be allowed to start and may be checked by syringing or by fumigation if there are no Muscats in the house.

The worst pest of all, if you get it, is Mealy Bug. There is no need for me to describe them; they are filthy little white insects that have ruined many a house of Grapes. Once they get on the vines they are extremely difficult to eradicate. During the growing season the grower can only keep them under control by keeping a sharp look out and killing them. The best way is probably by the use of a small camel-hair brush and methylated spirit.

Many growers will tell you it is impossible to get rid of them, but this is wrong. If you have got Mealy Bug fumigate with hydro-

cyanic acid gas as soon as the last bunch of Grapes is cut. Dress the vines in the winter with a tar-oil wash. Finally and most important, should we have a spell of very cold frosty weather throw the house wide open and let in all the frost you can. Syringe the vines over so that the water can freeze and cover the rods with ice. In this way you can get rid of bug. I do not advocate scraping the vines in winter, and I never practise it. But bear in mind all your trouble will be in vain if you introduce it again on any plants you may place in the house. At one time we had some Mealy Bug at Townhill, but have been entirely free now for some years.

Of fungus pests one has little to worry about. Mildew may be troublesome, but if it is, there is definite proof the vines have been badly treated, probably by bad ventilation or stagnant borders. If you get it you cannot get rid of it without damaging your Grapes. I would advise anyone with this trouble to cut all the Grapes, and if not fit for anything else make wine of them. Thoroughly spray with an approved fungicide, and hope for better luck next year.

Shanking is a disease which affects the vineries of most of us more or less. It is distinguished first by a black ring round the stem of the berries, followed by a slight shrivelling, and finally by discoloration. If you have any doubt as to whether it is shank taste one. Shankd berries are so bitter that no one could possibly eat one. In the best-managed vineries a few berries here and there may go. In a bad attack whole shoulders may be affected or the whole bunch. It is best to cut the berries out and destroy them, for they are useless. One may suggest many causes for the trouble. Allowing the borders to become dry, especially in the early stages of the vine's life is one which I have referred to earlier in this paper. On the other hand, it may be caused by over-watering, especially with cold, hard water direct from the tap. Over-cropping, bad ventilation, allowing the sub-laterals to develop too far and then cutting them back, by allowing too much foliage so that the leaves become thin and unable to function properly may also cause it. Probably there are still other reasons for it. Avoid these faults and the grower should not be troubled very much with shank.

The question of manure for vines may open up a line of thought for the grower. A great friend of mine, who is also a good gardener, tells me he never uses any artificial manure on his vines, yet his Grapes would compare favourably with any that are grown in the country. So there appears to be a definite difference of opinion, for I put a dressing on the borders in winter when the houses are cleaned, another when the fruit is set, and another when the berries begin to colour. I advocate a compound organic manure, and I would advise the small grower to purchase it from a reliable garden sundries firm rather than attempt to mix his own. It would probably be safer and more reliable.

If a grower is fortunate enough to possess a manure tank which holds the drainings from cow-sheds, pigsties, or farmyard generally, he should use some with discretion during the growing season. The



vines will benefit with a mulching of stable manure when the fruit is set, and this will also assist when watering.

Before closing I would like to dwell for a few moments on the inarching of vines. It occasionally happens that one wishes to change a variety for some reason or other, and it is not practical policy to take out just one rod and plant another. The chances are that the newly planted cane would not be a success. There is another very simple way of dealing with the matter which I have found in quite a large number of cases to be satisfactory. Select a shoot of the previous year's growth as near to the base of the old vine as possible. When pruning is done in the winter take a shoot or beg one of someone else of the variety you wish to inarch and plunge it in the soil out of doors. When the house is started in the spring take the scion inside and again plunge in soil, till the buds of the shoot on which you wish to inarch are on the point of bursting. Then cut a slice of wood from the side of the scion about the middle and another similar slice from the stock shoot at a convenient place. Now tongue the two pieces together, tie tightly with raffia and put the end of the scion in a bottle of water. I usually use some grafting wax over the union, but I have known quite satisfactory results without it. The union is complete in from three to four weeks, and when new growth has started on the scion take away the bottle. The new shoot thus formed must be treated as a new vine—all growth above the union being removed from the stock shoot.

On one occasion I exhibited 'Gros Colmar' Grapes in the autumn at the R.H.S. Fruit Show, and the next year I showed 'Madresfield Court' from the same roots grown from a cane I had inarched the previous season. After two years I was not satisfied with the 'Madresfield' and inarched 'Gros Maroc.' The next year I exhibited bunches of this 'Gros Maroc' at Shrewsbury and they helped me to win the big class there. 'Mrs. Pince' on 'Black Hamburgh' is good, 'Muscat of Alexandria' on 'Black Hamburgh' is good, 'Muscat of Alexandria' on 'Madresfield Court' was not so good with me.

This year I inarched 'Muscat Hamburgh' on to 'Muscat of Alexandria.' The 'Alexandria' was grafted by myself on to 'Black Hamburgh' before planting, so that the 'Muscat Hamburgh' is really on 'Black Hamburgh' stock. It has made excellent growth, and I propose to grow several bunches on it next year.

I have not deemed it necessary to dwell on the question of what plants can be grown successfully in a vinery. I will content myself with this advice. The grower should strive to ease the vinery as much as possible of plants during the flowering and ripening period of the Grapes. The use of a few frames and a small flowering house would greatly facilitate this.

During the winter, too, he should strive to keep the vineries as cold as possible, and keep only such plants in them as can stand a few degrees of frost.

## STRAWBERRIES UNDER NEON LIGHT.

By Dr. J. W. M. Roodenburg, Wageningen, Holland.

In 1936 the first strawberries of the season were put on the market in Holland at Amsterdam and at Utrecht as early as the end of January. These fruits were the results of experiments made at the Laboratory of Horticulture at Wageningen, Holland (Director, Prof. Ir. A. M. Sprenger).

The fact that sometimes in winter a few strawberries are brought to maturity in a greenhouse is no marvel, but the present instance is something quite different, for here the results were due to a special method of cultivation, which seems to be of much promise for general use.

Every gardener knows that he can only cultivate strawberries with good results when he begins after the New Year ; if he begins earlier, the attempt may fail.

For this reason people have tried for some time and at several places to begin growing strawberries in greenhouses earlier with the aid of artificial light, and important improvement was reached, but no practical cultural method had so far been obtained. A lot of flowers and fruits were produced by the additional light, but the quality was still poor. This can be changed, for after many years of experimental work, during which great difficulties had to be surmounted, a method has been found by means of which it is possible to begin the strawberry growing early in autumn.

The key to this secret is not only to remove the lack of light, but also to take care that the strawberry plants do not come into the state of dormancy after the summer. The strawberry plant seems to be very sensitive to the shortening of the days in autumn. The heat of the greenhouse is not sufficient to prevent the old leaves from dying and the younger leaves from failing to develop fully. When the plants have got into this state, it is practically impossible to bring their cultivation to a satisfactory end. The few flowers developed may produce fruits, but there are no richly branched clusters and no good crop is secured.

The method now applied is as follows : In the last days of September the plants were brought into the greenhouse and immediately treated to an additional irradiation during the night hours to prevent the shortening of the days from exercising its influence. The previous winter experiments had shown that about the first of October the critical moment is approaching at which autumn makes the plants unfit for successful cultivation with artificial light. The usual method to start plant irradiation with neon light in November therefore failed in the case of strawberries. It has not proved necessary for most of

the plants tested under neon light to begin irradiation so early, for with them it was sufficient to begin with the additional irradiation when the dark period set in.

This winter the results of the applied neon light irradiation have been very satisfactory, and they have also shown that such early cultivation cannot do without artificial light.

Whereas the irradiated plants grew well, flowering well and producing fruits, the unirradiated ones grew poorly, flowered with few blossoms and produced only a single fruit.

The quality of the strawberries cultivated with neon light was so good that the fruits realized high prices in spite of the crisis.

A description of one of the most important experiments running in the winter of 1935-1936 may follow here.

The strawberry plants necessary for this test were taken from a collection of 'Deutsch Evern' which on July 19 had been placed in flower pots (diameter  $6\frac{1}{2}$  inches) plunged out-of-doors. During the next days they were screened with reed mats. So long as the little plants had not become thoroughly rooted they were watered every day.

The plants were of the highest quality among those present in the laboratory garden. When potted they had four leaves; during August and September they developed vigorously, formed many new leaves, and were strongly stooled.

In September every fortnight a couple of plants were cut off near the roots to examine the flower primordia. At first nothing was to be seen, but on September 30 the presence of the first flower cluster at the apex could be observed under the microscope.

On October 2 the plants in pots were brought from out-of-doors into the greenhouse and plunged into peat-dust on the bench, viz. two sets of 24 plants on 17 square feet each. One set was irradiated with neon light, the other remained without artificial light.

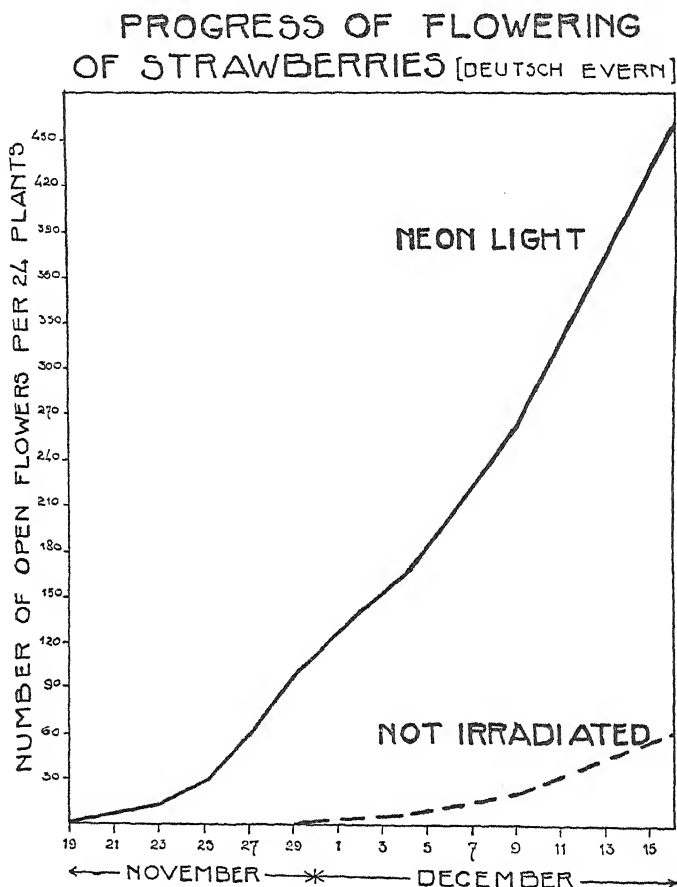
From October 7 the additional light was applied in the usual manner, 8 hours every night, from 10 P.M. till 6 A.M. A Philips Plant-irradiator, type No. 4310, 220 volt, 475 watt, was used at a distance of 4 feet from the lower edge of the reflector to the bench. The illumination applied amounted to about 45 foot candles neon light.

Until October 12 the minimum temperature at night did not fall below 50° F., the two following nights the temperature fell to 46° F., so that on October 14 the heating had to begin.

About October 21, a fortnight after starting the irradiation, the first difference could be detected between the unirradiated set and the neon set. Under neon light the younger leaves had grown in such a way that the leaves of the plants formed two storeys; the lower one was formed by the oldest matured leaves and the upper one by the new leaves. In contrast with them the old and new leaves of the unirradiated plants formed one spherical whole. This difference was caused by the fact that the plants under neon light continued their growth in the greenhouse and those without extra light gradually slackened their growth with the shortening of the daily light period.

At the beginning of November the effect of the irradiation especially showed in the elongation of the leaf stalks, which gave the plants a looser appearance than the unirradiated ones, on which the leaves remained close together and the leaves of the irradiated plants were larger.

On November 12 it was possible to see the flower buds of all neon



plants with the naked eye, whereas only three out of the 24 unirradiated plants showed them.

During the next week the flower stalks elongated strongly and the buds developed well. In the set without additional light half of the plants bore flower buds now.

The first flowers of the neon set opened November 19, those of the unirradiated set not before November 29. The progress of the opening of the flowers is shown in the graph. The curves show clearly that the irradiated plants flowered much earlier and much more abundantly.

The neon plants developed a luxuriant crop with solid flower stalks

and large leaves which rose about  $5\frac{1}{2}$  inches above the edge of the flower pot (November 19).

The plants without extra light, on the other hand, remained behind in development, the flower stalks scarcely elongated, the leaf area remained small and the leaves did not rise more than  $2\frac{1}{2}$  inches above the edge of the flower pot.

The flowers were pollinated artificially. The pollination was done every two days, at first with a soft brush, afterwards, on account of the increasing number of flowers, with a kind of duster.

On December 6 the 24 irradiated plants produced 197 open flowers, whereas the 24 unirradiated ones had only 14. Figures 147 and 148 show the notable difference. It is striking that the neon plants had well-elongated and much-branched flower stalks, and that generally each flower of the unirradiated set grew apart direct out of the heart of the plant without a common stalk having appeared.

During the experiment the old leaves were removed regularly to keep the plants as healthy as possible. Besides the normal oldest leaves dying yellow, a brownish-black discoloration appeared on some leaves, especially on the lot without extra light, but only sporadically on the neon set. This phenomenon too is apparently connected with light deficiency.

On December 16 several fruits started to grow well under neon light. As a beginning of mildew was observed, the air moisture was kept relatively low and henceforth sulphur was dusted every week or every fortnight.

Because several fruits of some weight had been formed on the neon set, the flower stalks began to droop, and it was necessary to provide the plants with rings of iron wire (December 20). With the aid of these rings the stalks came into an upright position again and got above the leaves, so that the fruits were able to ripen hanging free.

Meanwhile, judging from their appearance, the plants needed manure. They received a solution of a concentrated fertilizer (composition 17 per cent. nitrogen, 15 per cent. phosphorus and 18 per cent. potassium). This was repeated every three weeks. The leaves of the neon plants grew regularly, the young leaves being dark green. On the unirradiated set the plants shrunk more and more, though new leaves continually appeared which, however, did not continue their growth. This was therefore the effect of the lack of light and of the state of dormancy into which these plants had got on account of the length of day, which was too short.

On January 13 the number of flower stalks and of the fruits larger than about  $\frac{3}{4}$  inch, were counted.

<i>Per 24 Plants.</i>	<i>Neon.</i>	<i>Not irradiated.</i>
Number of flower stalks of the first bloom	144	85
Number of fruits larger than about $\frac{3}{4}$ inch	65	1

Some irradiated plants already had flower stalks with open flowers of the second bloom, which were not counted here. In the set without

additional light a second bloom was out of the question; besides, the counted stalks had been developed badly. The main stalks were so short that they were concealed beneath the leaves or did not appear at all. From one centre more than one stalklet appeared together.

The beginning of the colouring of the fruits on the neon set was recorded on January 21, and the gathering of the first fruits on January 30. These fruits had a mean weight of  $13\frac{1}{2}$  grammes apiece.

On February 14 one unirradiated plant produced one single fruit of 10 grammes. Up to this moment, that is in a fortnight, 70 fruits had already been gathered of the 24 plants of the neon set. These fruits fetched a high price, varying from 14 to 41 cents apiece (Netherlands currency).

The irradiation was stopped on March 1. The gathering drew to an end, while simultaneously the size of the fruits diminished. On March 13, at the finish of the gathering, the total weight of all gathered fruits during  $1\frac{1}{2}$  months amounted to 1309 grammes for the neon set to 30 grammes for the unirradiated one.

These results indicated clearly that in this time of the year practically nothing can be gathered without artificial light.

The table shows the course of the gathering.

*Table of the Gathering of Strawberries (per 24 plants). Experiment with 'Deutsch Evern,' 1935-36.*

1936.	NEON LIGHT.					
	Total Weight, Grammes.	Total number.	Number.			
			Quality.			
			1st over 10 gr.	2nd 10-5 gr.	3rd 5-3 gr.	Less than 3 gr.
Jan. 30-Feb. 14 .	689	76	28	36	12	6
Feb. 15-Feb. 28 .	392	81	1	30	41	9
Feb. 29-March 13 .	228	94	1	7	44	42
Total . . .	1309	251	30	73	97	57
NOT IRRADIATED.						
Jan. 30-Feb. 14 .	10	1	1	—	—	—
Feb. 15-Feb. 28 .	9	2	—	1	—	1
Feb. 29-March 13 .	11	2	—	1	1	—
Total . . .	30	5	1	2	1	1

The neon plants were cleared away on March 26. The unirradiated ones remained till April 22; they did not show any renewed growth of any significance. The state of growth inhibition of these plants had not been abolished by the fine spring weather.

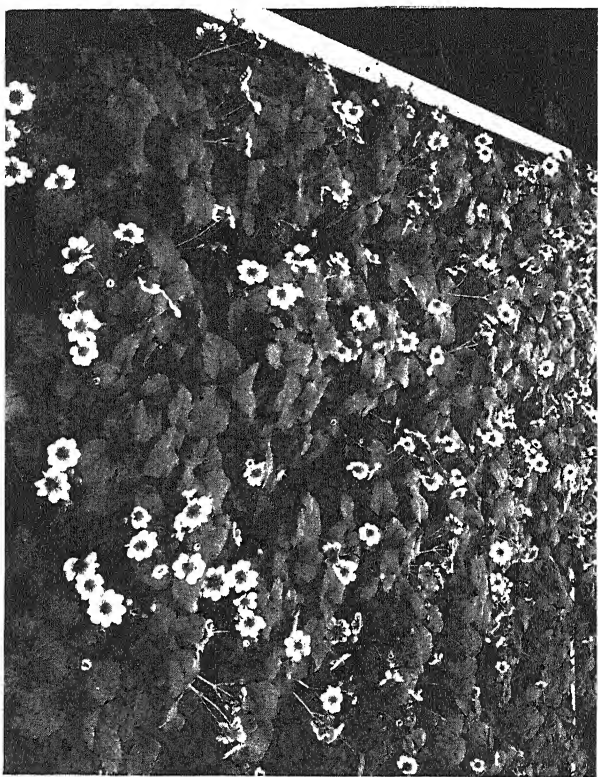


FIG. 147.—STRAWBERRY 'DEUTSCH EVERN,' Dec. 7, 1935.  
Potted July 19. Housed October 2.  
Exposed to neon light (about 45 ft. c.) from 10 p.m. to 6 a.m. each night  
from October 7. (Compare fig. 148.)

[To face p. 508.

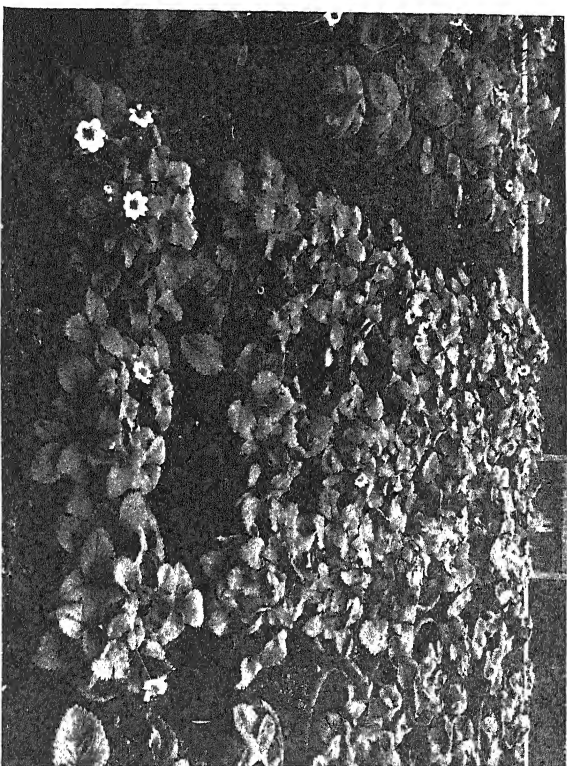


FIG. 148.—STRAWBERRY 'DEUTSCH EYERN', DEC. 7, 1935.  
Potted July 19. Housed October 2.  
Not exposed to neon light.  
(Compare fig. 147.)



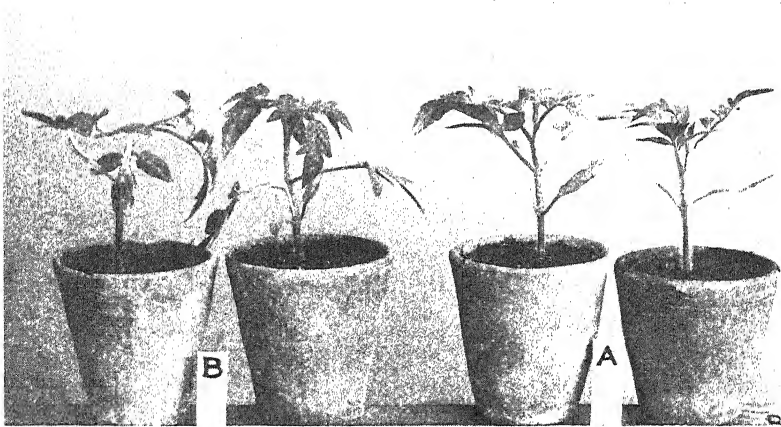


FIG. 149.—EFFECT OF HORMONES ON TOMATO PLANTS.

A. Plants to which lanolin alone was applied. B. Plants to which a paste containing one part of phenylacetic acid in one hundred was applied.

Bending of stems and petioles took place in less than 48 hours.

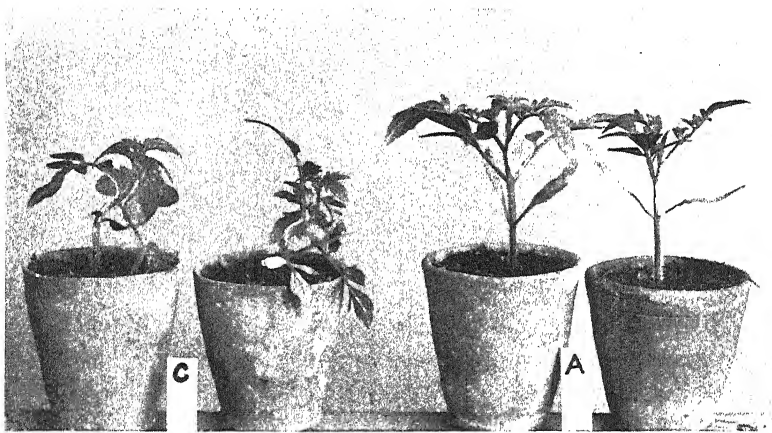


FIG. 150.—EFFECT OF HORMONES ON TOMATO PLANTS.

A. Plants to which lanolin alone was applied. C. Plants to which a paste containing one part of  $\beta$ -indolylacetic acid in one thousand was applied.

Bending of stems and petioles took place in less than 48 hours.

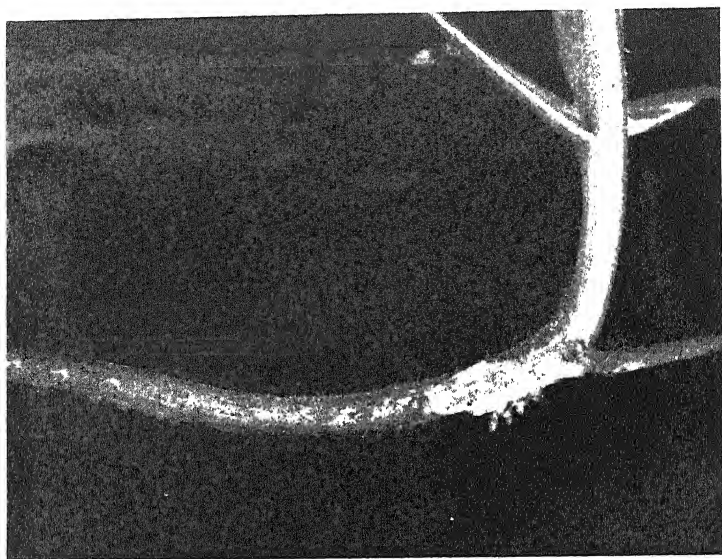


FIG. 151.—SHOWING ROOT DEVELOPMENT 10 DAYS AFTER APPLICATION OF LANOLIN PASTE CONTAINING ONE PART OF  $\beta$ -INDOLYLACETIC ACID IN ONE THOUSAND PARTS OF LANOLIN.

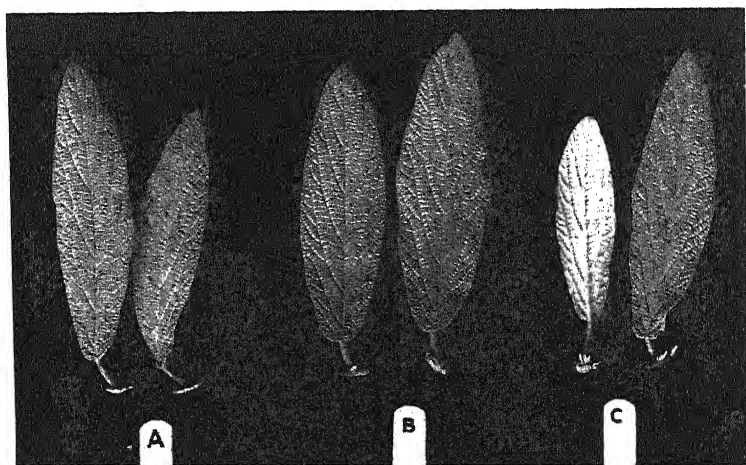


FIG. 152.—SHOWING ROOTING OF BUD CUTTINGS OF *VIBURNUM RHYTIDOPHYLLUM* 21 DAYS AFTER TREATMENT.

A. Water. B.  $\alpha$ -naphthaleneacetic acid  $\frac{1}{10000}$ . C.  $\beta$ -indolylacetic acid  $\frac{1}{10000}$  for 24 hours.

[To face p. 509.

As already mentioned the sale prices of the strawberries had been very satisfactory; of course they decreased gradually towards the end of the gathering. Whereas in February the average amounted to about 20 cents apiece, it was still 6 cents at the beginning of March. In total a mean price of 17½ cents apiece was attained. Thanks to the neon light, the plants realized about 29·80 guilders (Netherlands currency). This amount was received for the fruits of 24 plants each having 5 flower stalks which mostly appeared out of different growing points.

Against these proceeds of 29·80 guilders from 24 plants are the expenses, which have been estimated at 10·20 guilders according to subjoined calculation:—

	<i>Guilders.</i>
Heating cost of planted area (16 sq. ft.) during 5 months . . .	1·50
Plant material, soil, manure, etc., for 24 plants . . .	0·75
Wages for planting, heating and tending . . .	1·50
Cost of electric current during 4 months, 1000 hours of 82·5 watt per 16 sq. ft. at 2 cents per k.w.h. night-current tariff, 82·5 k.w.h. . . . .	1·65
Wastage of the lamp, calculated after a 2000-hours duration of life of the tube . . . . .	3·75
Depreciation of the plant-irradiator . . . . .	1·05
Total cost per 24 plants . . . . .	<u>10·20</u>

Depreciation of the greenhouse and the heating apparatus is not included, for it is difficult to estimate them as the situation will be different in every nursery. As appears from the above calculation it is evident that the high prices paid early in the year for strawberries will make cultivation under neon light profitable.

Summarizing the results of the experiment described above comes to this: that it is quite possible to begin strawberry growing early in autumn provided care is taken to put the plants into the greenhouse at the beginning of October and to irradiate them at night. This prevents the plants getting into such a state, on account of the shortening of the days, that they are no longer fit to be forced. They must be cultivated directly out of summer, without having been exposed to frost. If one would like to begin later on, it is necessary that the cold of winter passes over the plants in order to be able to begin forcing about New Year.

With the means now at our disposal it is not yet possible to begin profitable cultivation in November or December. So one is put to the choice either of beginning to force very early with the aid of artificial light or in the usual manner rather late. The use of both cultural methods can form a well-connected whole, neon-strawberries from January till March and strawberries forced by heat at Easter.

## CONTRIBUTIONS FROM THE WISLEY LABORATORY.

## LXXIX.—EXPERIMENTS WITH GROWTH SUBSTANCES OR HORMONES, AND THE ROOTING OF CUTTINGS.

By Dr. M. A. H. TINCKER, M.A., F.L.S., WISLEY.

IN the September number of the R.H.S. JOURNAL (61, p. 380) a review was published of the work concerned with the discovery, isolation, and use of plant hormones. The present article reports some of the experiments carried out at Wisley with a view to applying the discoveries to horticultural practice.

*Heteroauxin extraction and activity.*—The earlier experiments were concerned with extracting heteroauxin from urine by following Thimann's methods based on those of Kogl. An extract was obtained which when applied in lanolin paste to tomato plants proved effective in causing swelling of the stems due to stimulation of cambial activity succeeded by the emergence of roots from the stem; but when this preparation was applied to the tender tissues of young Dahlia cuttings taken from forced tubers in early spring it proved toxic. Further evidence of some damaging effect was observed with soft cuttings of *Calceolaria violacea*; this therefore led to the preparation of a further sample with more elaborate methods of extraction by means of which success was attained. Using the second sample on cuttings of *Antirrhinum speciosum* a slight acceleration of root development was observed, particularly in the rate of elongation of the roots formed from the cuttings. Another symptom of activity of the preparations was the retardation of the opening of buds on cuttings.

*Retardation of bud opening.*—Cuttings of *Spiraea japonica* were taken on March 3, and to them was applied pure lanolin, lanolin with 1 per cent. phenylacetic acid, and lanolin with 0.05 per cent. urine extract; further controls were untreated. By March 25 the buds on the controls, and those which had been smeared with lanolin only, were developing and unfolding small leaves. Those smeared with the lanolin containing the phenylacetic and heteroauxin preparation appeared still dormant. A similar result was obtained with cuttings of *Cornus sanguinea* taken at the same time. In a further series of *C. sanguinea* the outer tissues were cut and the lanolin pastes were smeared under a raised flap of the external tissues. Besides bud retardation, some damaging of the tissues was observed with the heteroauxin: possibly this was again due to impurities. The phenylacetic acid so applied accelerated callus formation at the base of the cutting, but no data concerning root development were collected from this series.

With *Salix vitellina britzensis* a smear of approximately 0.05 gram

of a  $\frac{1}{100}$  phenylacetic acid paste in lanolin, and 0.05 gram of the heteroauxin preparation proved effective in checking the opening of buds. This willow was most sensitive also to traces of pastes applied after cutting the outer tissues.

By means of glass tubing attached by rubber tubing to each cutting it was possible to place small quantities of weak solution on the top of cuttings already in a pot. With a solution of  $\frac{1}{10000}$  phenylacetic acid it was found that no damage was caused to the tissues, though 1 c.c. of the solution retarded bud opening very markedly. The transport of the solution, or its effect, downwards was apparent, for the basal buds ten inches below the tip did not open as quickly as untreated ones.

To test various concentrations of phenylacetic acid a series of solutions was made up on March 27, each one diluted 10 times more than the previous solution; the range was from one in a hundred parts of water to one in ten million. Into these solutions in sterilized flasks cuttings were placed so that an inch of wood was in the liquid. By April 8, in the  $\frac{1}{100000}$  solution there was a decided stimulation of the rate of root formation, both in length and number of roots produced, compared with the rate in distilled water. With the  $\frac{1}{10000}$  solution a slight stimulation in root development was observed; with the  $\frac{1}{1000}$  solution no roots formed in the solution at all, but many developed above the solution in the damp atmosphere. The order of root development was maintained for some weeks; but as the experiment proceeded the difference between cuttings in the distilled water (controls) and those in the  $\frac{1}{100000}$  solution became less.

This was the first indication obtained at Wisley of the stimulation of root production by the use of these solutions, which have now been further tested. This experiment also showed differences in the rate of opening of the leaves.

*Root formation in cuttings.*—The use of pastes was tested with soft and hard cuttings as follows:

*Pelargonium zonale.*—A number of tests have been made with different varieties of this common plant. The pastes used have contained phenylacetic acid,  $\beta$ -indolylacetic acid and  $\alpha$ -naphthaleneacetic acid. The concentrations used included  $\frac{1}{100}$  and  $\frac{1}{1000}$ .

In March smearing the sides of the cutting caused marked acceleration of development. Not only did roots develop from the base of the stem but from its side, through the pastes.  $\beta$ -indolylacetic proved highly effective, phenylacetic rather less so, and  $\alpha$ -naphthaleneacetic has also given acceleration. It appears that the accelerated root development continues for a considerable time, for on examination some five or six weeks later the effect was still plainly visible. This plant is a useful test plant for chemical preparations.

*Tomato.*—The tomato plant responds very readily to the paste method of treatment. Young seedlings bend, twist and produce swollen stems remarkably rapidly (figs. 149, 150). Root initials develop so rapidly that by cutting sections they may be easily seen after three

days from the time of application. In the course of less than a week roots may be plainly visible on the outside of the stem (fig. 151).

On thick old stems  $\beta$ -indolylacetic,  $\alpha$ -naphthaleneacetic and phenylacetic acid have all produced roots, in that order of effective action at concentrations of one in a thousand in lanolin paste. This is another useful test plant for chemical preparations.

*Solanum Capsicastrum*.—From thick stems of a diameter of over half an inch roots have developed in three weeks after the application of lanolin paste containing phenylacetic acid—one in a hundred parts.

*Phlox subulata*.—Cuttings taken in early July and smeared with various lanolin pastes before insertion into sand showed that slightly more rapid rooting can be induced by pastes containing  $\beta$ -indolylacetic acid and  $\alpha$ -naphthaleneacetic acid at a concentration of one part per thousand of lanolin. The treated cuttings, when  $\alpha$ -naphthaleneacetic acid was used, showed a tendency to form roots from among leaves above the sand level. Pastes containing  $\alpha$ -naphthaleneacetic acid at a concentration of one part per hundred of lanolin damaged the tissues.

*Buddleia alternifolia*.—The rooting of cuttings taken in July was accelerated by the application of lanolin pastes containing  $\alpha$ -naphthaleneacetic acid at a concentration of one to a hundred parts, and  $\beta$ -indolylacetic acid at a concentration of one to a thousand parts.

*Diervilla rosea*.—The rooting of cuttings taken in July was accelerated by the application of lanolin pastes containing phenylacetic acid at a concentration of one to a thousand parts, and also by pastes containing  $\beta$ -indolylacetic acid at the same concentration.

*Dahlias*.—Cuttings of the variety 'Teviotdale Rose' were treated with lanolin paste containing phenylacetic acid of a concentration of one in a hundred and one in a thousand. The stronger concentration completely prevented rooting in all cuttings for many days, yet caused no visible sign of damage—the cuttings were fresh and turgid; the weaker concentration permitted ready rooting, but no material gain over untreated controls was noted. All the cuttings had well-formed leaves, which probably produced the necessary amount of root-forming hormone. It therefore appears that an "overdose" of root-forming substance can be given.

*Phaseolus multiflorus*.—Several authors have already reported experiments with decapitated shoots of *Vicia faba*. A test was made with *Phaseolus multiflorus* by cutting the stems below the first large leaves and applying the lanolin pastes to the cut surface. Generally callus formation did not take place. The hormones seemed to have no effect on the shoots. New buds arising in the axils of the cotyledons developed but no striking effect upon the rate of development was observed as a result of application of the pastes. The method was therefore a failure.

The above tests were devised to prove that efficient pastes were available—in this they served their purpose. The pastes were then tried on plants known to be difficult to root from cuttings.

*Apples*.—It is well known that Apples do not readily root from

cuttings. The lanolin pastes containing phenylacetic acid, heteroauxin from urine, and a preparation from yeast believed to contain auxin were applied to Apple cuttings on March 19. The varieties tested were 'Victory,' 'Melba' and 'Crawley Beauty.' All the preparations very definitely retarded the opening of the leaves with the three varieties. By the end of May, with the variety 'Melba,' the preparations had caused an increase in the rate of callus formation. Slight indications of a similar effect of these substances were obtained with the other two varieties. The root formation by the end of June was poor and the cuttings were then discarded. Whilst the Apples responded slightly to treatment, rapid success in rooting was not attained by this method.

*Kalmia latifolia*.—This species does not quickly root from cuttings. In March cuttings of the previous year's wood were taken, a deep incision into the wood about  $\frac{3}{4}$  inch in length was cut, and a flap of tissue raised into which the lanolin pastes were inserted. By July, when a very large callus formation had taken place, it appeared that the application of phenylacetic paste (1 in 100) had accelerated callus formation slightly. No roots were then seen, and in that respect the paste method failed, but roots were formed in September in all series.

*Schima argentea*.—A precisely similar test with this species gave the same results except that the phenylacetic acid caused even more rapid acceleration of callus formation.

With *Pittosporum Dallii* cuttings taken in March I had no success with lanolin pastes containing phenylacetic acid despite cutting the wood, nor with *Hamamelis japonica* cuttings taken in March; retardation of leaf development however occurred. With *Rhododendron arboreum*, both old woody internodes and cuttings of younger wood of the previous season were smeared with lanolin pastes containing phenylacetic acid. Except that leaves slowly developed from the most unpromising-looking dormant buds on very old wood, I had very little success with this species; only a few cuttings slowly formed callus.

It therefore seems that with these woody and recalcitrant species the paste method is ineffective.

*Tests of solutions—methods employed*.—As  $\beta$ -indolylacetic acid and  $\alpha$ -naphthaleneacetic acid dissolve slowly in water it was found expedient to dissolve the chemicals in a few drops of 95 per cent. ethyl alcohol first, and then add the volume of water required.

Direct tests proved that the small quantities of alcohol used are without effect at the very great ultimate dilution employed.

$\beta$ -indolylacetic acid undergoes a colour change when in solution exposed to daylight. For these experiments the solutions were kept in the dark when not in use and fresh solutions made up weekly.

The tests were carried out in the simplest way. The cuttings used, usually thirty in an experiment, were taken, and if necessary a few basal leaves were removed; they were then placed with their basal ends standing in the solution of a depth of about 1 inch for the experimental period. Control cuttings were placed similarly in distilled water.

Thus the dilute solutions were taken up by the cuttings which remained in the light during the day. With solutions that proved too strong injury of young delicate leaves resulted; the path of the injurious chemicals was readily traced from the base upwards through the wood vessels to the veins of the leaf to the leaf tissues—there was nothing abnormal in the route of uptake.

Preliminary experiments were concerned with a range of concentrations and time of exposure of the cuttings to these solutions.

On removing the cuttings their basal ends were well rinsed with water to terminate the period of uptake of the solution. The cuttings were then placed in a cool frame in sand in the ordinary way.

*Holly (Ilex Aquifolium).*—The cuttings taken at the end of June were placed in solutions containing the hormones at a concentration of four parts in ten thousand; this proved too strong, as the young tissues were damaged.

Further cuttings were made, and the young tips and tender leaves removed; the dilution of the solutions was increased four times to one part of chemical to ten thousand of water. No damage resulted.

Six weeks after insertion in the sand 50 per cent. of the cuttings treated with  $\beta$ -indolylacetic acid had rooted, while of the controls none were rooted but callus tissue had developed.

This experiment was repeated by taking cuttings in early August. Again root formation was accelerated, the treated cuttings rooting in four weeks from insertion into sand. The controls slowly developed callus tissue.

*Escallonia 'Donard Seedling.'*—Solutions of four parts to ten thousand of water proved too strong and damaged the young tissues even when the period of exposure was reduced from twenty-four hours to four hours. It was observed, however, that although the basal inch of the cuttings might be damaged roots formed in the undamaged parts more rapidly as a result of the uptake of  $\alpha$ -naphthaleneacetic acid and  $\beta$ -indolylacetic acid. This is shown in fig. 153. On reducing the concentration to one part in ten thousand more satisfactory results were obtained. From control cuttings rooting took place at the base; from treated cuttings accelerated root formation took place; rows of young roots were rapidly formed, and occasionally a few roots were formed amongst the leaves. Many more roots grew from treated cuttings than from controls (fig. 154).

Another series was set up to test the effect of leaving the cuttings in the weakest solutions all the time, and so avoiding the operation of insertion in sand. Briefly, no improvement in rooting was so obtained. Rooting took place in the moist atmosphere above the solutions as well as in the solutions.

*Diervilla rosea.*—A test was carried out with this shrub: cuttings were taken at the end of July. Three weeks after insertion in the sand it was observed that treated cuttings had produced longer and more roots on a greater number of cuttings than had control cuttings, which had only formed a little callus tissue in that time.



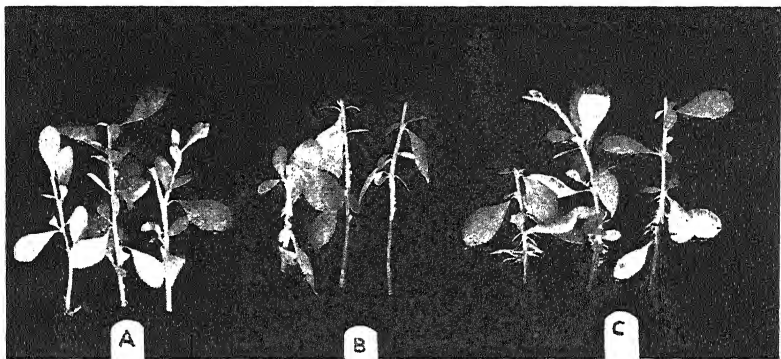


FIG. 153.—SHOWING ROOTS ON ESCALLONIA 'DONARD SEEDLING' 21 DAYS AFTER TREATMENT.

A. Water. B.  $\alpha$ -naphthaleneacetic acid  $\frac{1}{10000}$ . C.  $\beta$ -indolylacetic acid  $\frac{1}{10000}$  for 4 hours only.

(See text, and note rooting above damaged portion.)

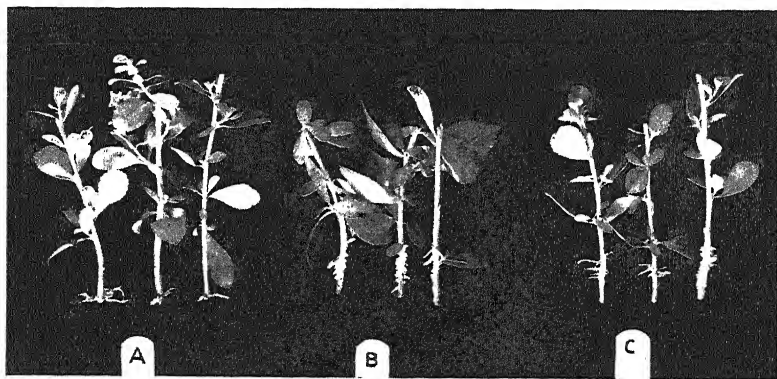


FIG. 154.—SHOWING ROOTS ON ESCALLONIA 'DONARD SEEDLING' 21 DAYS AFTER TREATMENT.

A. Water. B.  $\alpha$ -naphthaleneacetic acid  $\frac{1}{10000}$ . C.  $\beta$ -indolylacetic acid  $\frac{1}{10000}$  for 24 hours.

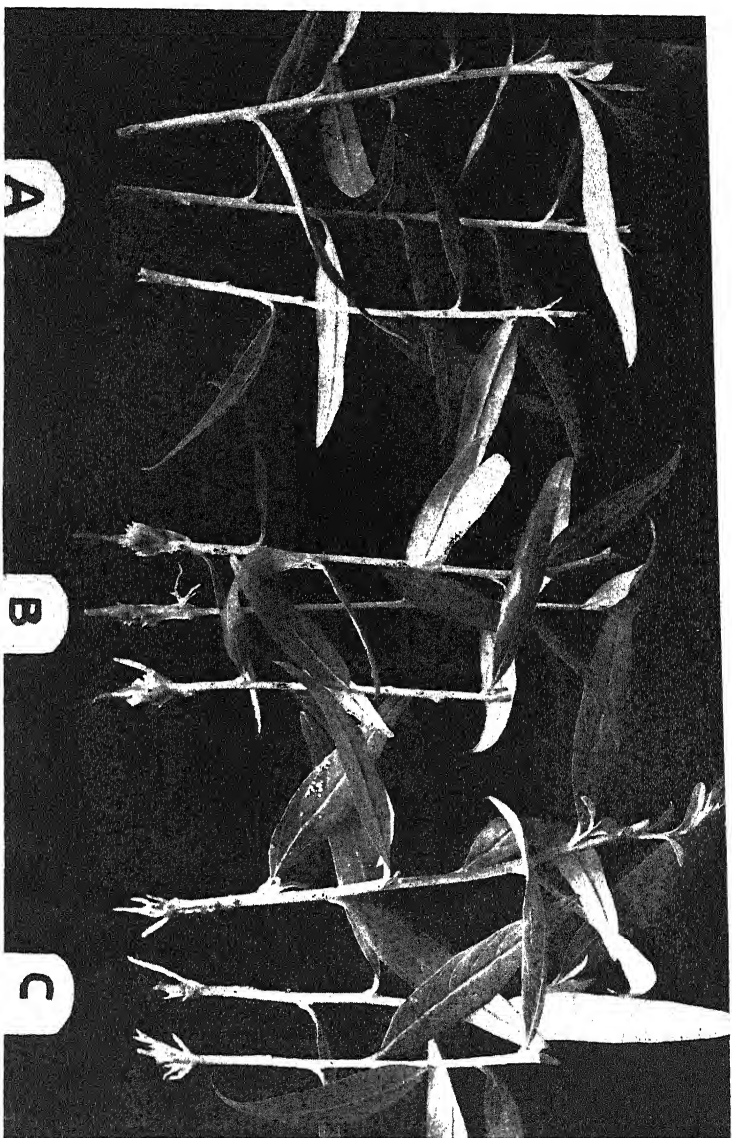


FIG. 155.—CUTTINGS OF *Buddleia alternifolia*, OF HARDER WOOD THAN IN FIG. 156.  
 A. Water. B.  $\alpha$ -naphthaleneacetic acid 10000. C.  $\beta$ -indolylacetic acid 10000. (See text.)

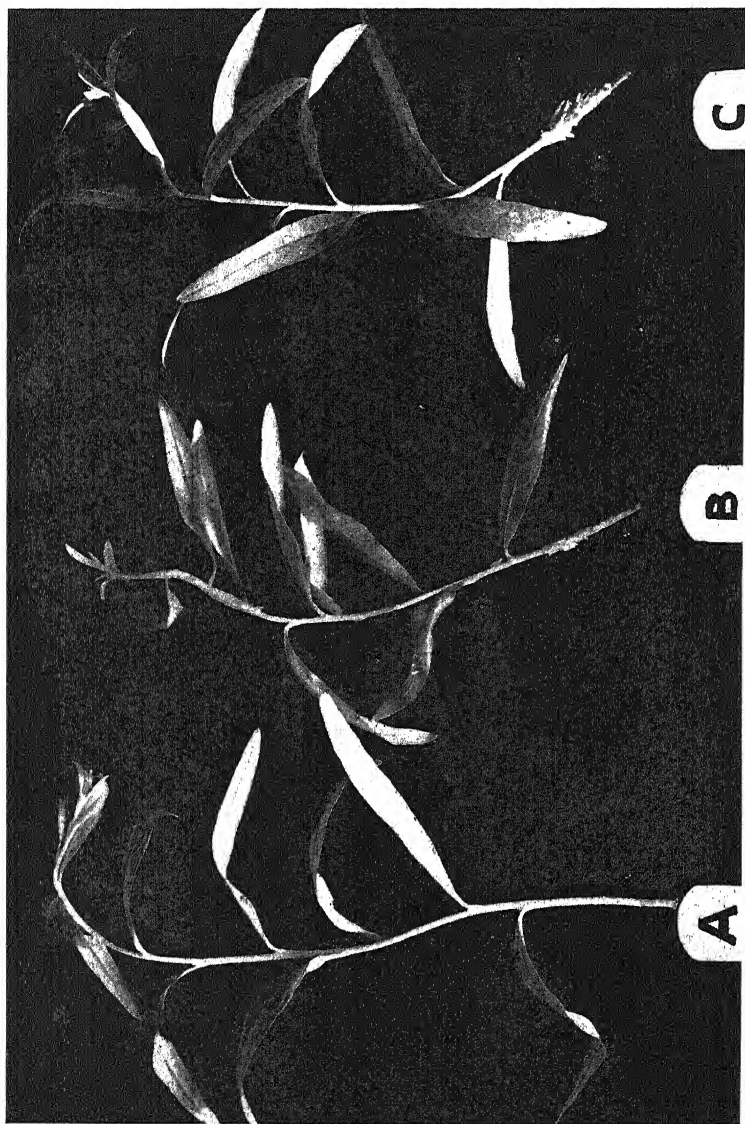


FIG. 156.—SHOWING ROOT DEVELOPMENT IN *BUDDLEIA ALTERNIFOLIA* 14 DAYS AFTER TREATMENT.  
(References, see fig. 155.)

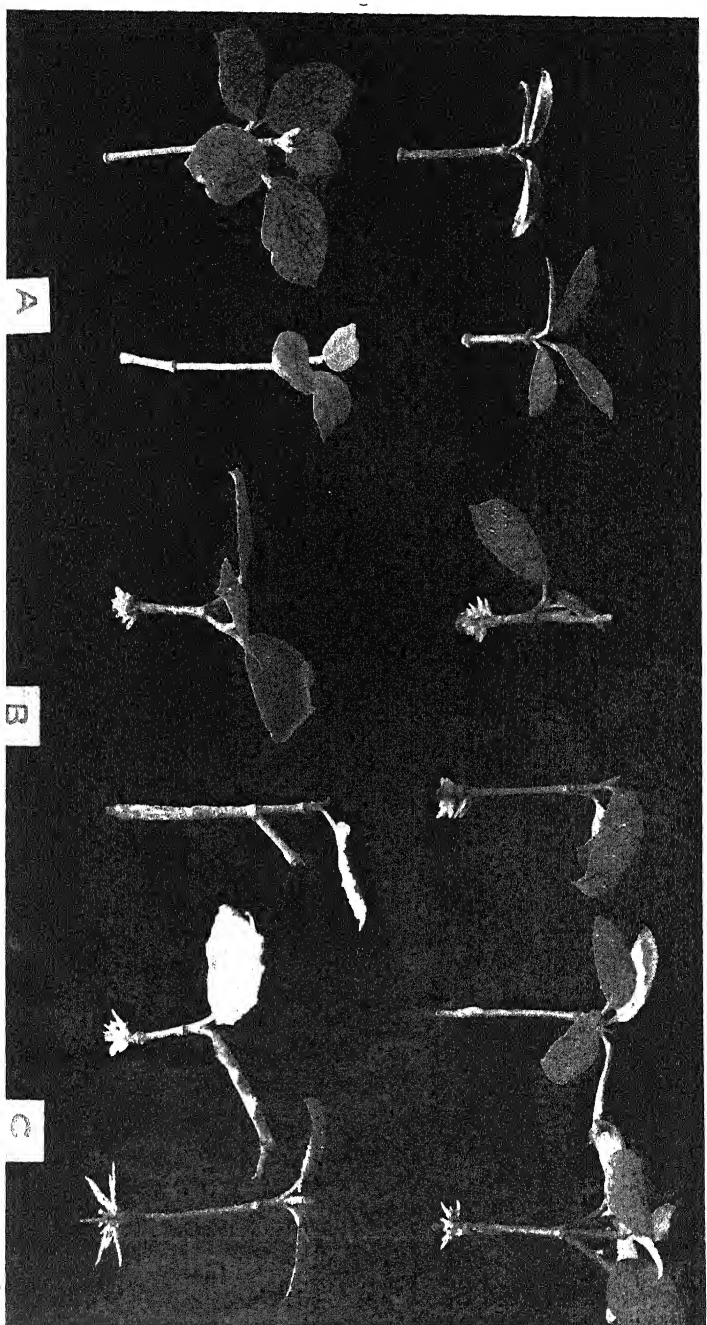


FIG. 157.—SHOWING ROOTING OF *VIBURNUM CARLESII* 21 DAYS AFTER TREATMENT. (See text.)  
 A. Water. B.  $\alpha$ -naphthaleneacetic acid  $10^{-5}$ . C.  $\beta$ -indolylacetic acid  $10^{-5}$  for 24 hours.

*Deutzia scabra*.—A similar experiment with this shrub gave results comparable to those with *Diervilla*, showing acceleration of rooting as the result of standing the cuttings in the solutions for twenty-four hours.

*Buddleia alternifolia*.—Cuttings taken in mid July and treated with the dilute solutions for a day gave clear results in fourteen days, when all the treated cuttings had rooted, whilst no controls had formed roots (fig. 155). With cuttings of young wood taken from the tips of the stem, many roots developed amongst the leaves, above the sand, after treatment with  $\alpha$ -naphthaleneacetic acid (fig. 156). When tested these roots functioned normally, for on dividing the cutting into two parts and inserting the upper portion in sand satisfactory growth took place. The remarkable response shown by this species has repeatedly been obtained and has been put to use in devising tests concerned with technique: these tests will be considered later.

*Viburnum Carlesii*.—The cuttings taken at the end of July were rather small and bore only two leaves. Ten days after insertion in the sand it was observed that in the treated series very active growth was taking place in the basal region of the stem, which was already swollen, and the bark of which was beginning to crack and show signs of distension due to the rapid growth in the cambial region. From these swellings roots freely developed: a photograph is shown (fig. 157) of the rooted cuttings in which the acceleration of rooting is plainly visible. Well-developed roots in the treated plants were formed in less than four weeks and the cuttings were then potted. Controls bore no roots at that time.

*Viburnum rhytidophyllum*.—The cuttings taken in early August consisted of a leaf blade, petiole, a very small dormant bud in the leaf axil, and a small shield-shaped piece of the stem cut out to remove with the cutting some cambial tissue. Such cuttings have been termed "bud cuttings." These were treated, as were those in other experiments, for a day in the solution and then inserted into sand so that the leaf blade lay on the surface. In less than four weeks root initials were visible from the woody portion of the stem of cuttings treated with  $\beta$ -indolyl-acetic acid, one to ten thousand; root formation was a little slower from cuttings treated with  $\alpha$ -naphthaleneacetic acid but the roots were visible in five weeks' time; from the controls no roots were visible during this period. The root formation can be seen in fig. 152.

*Discussion*.—The results so far obtained with solutions and woody cuttings have been promising. Tests with many other plants are in progress; these include shrubs and trees some of which have previously proved difficult to propagate; the list includes Camellias, Kalmias, Rhododendrons, Pines and Spruces.

It may be that some of these more difficult species will not readily respond to such small quantities of the active substances. Possibly more than one treatment may be advantageous, or more highly concentrated solutions for short intervals of time may prove beneficial, or longer intervals for absorbing dilute solutes may be necessary.

It is possible for plants to take up chemicals by spraying or by injection, and from solutions by means of the leaves, and from pastes through thin outer coverings ; quite possibly these growth substances can be administered to the plant before taking the cutting in such a way that when severed the cutting would form roots. Various tests are now being carried out to explore these possibilities. A further report will be published in this JOURNAL in due course.

The writer gratefully acknowledges the interest and helpful criticism of Professor F. E. WEISS, F.R.S., in these experiments, and the assistance readily given by Dr. A. MARTIN (California) in the earlier experiments. To Mr. N. K. GOULD he is indebted for the photographs.

## PLANTS TO WHICH AWARDS HAVE BEEN MADE IN 1936.

\***Aster 'Audrey Tanner.'** A.M. October 2, 1936. Raised by the Royal Horticultural Society, Wisley. Height 2 feet; compact erect habit; flowers  $1\frac{3}{4}$  to 2 inches diameter, bright rose-pink with deep yellow disc. Amellus type.

\***Aster 'Beechwood Challenger.'** A.M. October 2, 1936. Raised and sent by Messrs. Wood, Taplow. Height 3 feet; compact erect habit; flowers single,  $1\frac{1}{4}$  to  $1\frac{3}{8}$  inch diameter, deep reddish carmine. Novi-belgii type.

\***Aster 'F. R. Durham.'** A.M. October 2, 1936. Raised by Mr. H. B. Vokes, introduced and sent by Messrs. Barr, Taplow. Height 4 feet; erect habit; flowers single,  $1\frac{1}{4}$  inch diameter, bright royal purple with a golden disc changing to bronze. Novi-belgii type.

\***Aster 'H. Harrow.'** A.M. October 2, 1936. Raised by the Royal Horticultural Society, Wisley. Height 2 feet; compact erect habit; flowers  $2\frac{1}{2}$  inches diameter, bright rich lavender-blue. Amellus type.

\***Aster 'Kathleen Chilman.'** H.C. October 2, 1936. Raised by the Royal Horticultural Society, Wisley. Height 2 feet; compact erect habit; flowers  $2\frac{1}{2}$  inches diameter, bright light lavender-blue. Amellus type.

\***Aster 'Mrs. Pierpont Morgan.'** A.M. October 2, 1936. Raised and sent by the late Hon. Vicary Gibbs, Elstree. Height  $6\frac{1}{2}$  feet; erect habit; flowers single,  $1\frac{1}{4}$  inch diameter, pale greyish lavender. Novi-belgii type.

\***Aster 'Pink Nymph.'** F.C.C. October 2, 1936. Raised by the late Mr. E. Beckett. Introduced and sent by Messrs. Wood, Taplow. Height  $5\frac{1}{2}$  feet; erect habit, closely resembling Aster 'Climax' in growth; flowers 1 to  $1\frac{1}{2}$  inch diameter, rose-pink. Novi-belgii type.

\***Aster 'Preziosa.'** A.M. October 2, 1936. Sent by Messrs. Barr, Taplow. Height  $2\frac{1}{4}$  feet; compact erect habit; flowers  $1\frac{1}{2}$  to  $1\frac{3}{4}$  inch diameter, blue tinged lavender. Amellus type.

**Brassocattleya**  $\times$  '**Westminster**' var. '**Paeony**.' A.M. October 13, 1936. An unusually large flower, measuring  $7\frac{1}{2}$  inches across. The sepals and petals are a pleasing rose colour, while the wide labellum is rich purple with a golden-yellow centre. Obtained by crossing *B.-c.*  $\times$  '*Dr. G. MacDonald*' with *Cattleya*  $\times$  '*Tityus*.' Shown by N. Prinsep, Esq., The Boxes, Pevensey Bay, Sussex.

**Cypripedium**  $\times$  '**Aigrette**,' **Exbury** var. A.M. October 13, 1936. A well-formed flower of honey-yellow colour, the dorsal sepal having a white apex. Obtained by crossing *C. insigne* with *C.*  $\times$  '**Phantasy**.' From Lionel de Rothschild, Esq., Exbury, Southampton.

**Cypripedium** × 'Ambition' var. 'Gog.' A.M. October 27, 1936. This elegant hybrid is the result of crossing *C. Fairrieanum* with *C.* × 'Gwen Hannen,' although there is little evidence of the well-known characters of the latter parent. The flower is much above the average size and well formed. The dorsal sepal white with an apple-green base, the petals honey-yellow with brownish markings and shading. Exhibited by Lionel de Rothschild, Esq., Exbury, Southampton.

**Disanthus cercidifolia.** A.M. October 27, 1936. From Mr. W. J. Marchant, Wimborne. An uncommon Japanese shrub, remarkable for its vivid autumnal colouring. It is of good habit, with slender, spreading growths, eventually reaching a height of 8 or 10 feet. The large leaves are broadly ovate or suborbicular, cordate at the base, dark green and somewhat glaucous beneath during the summer, changing to a rich vinous red. The insignificant reddish flowers are occasionally produced during the summer.

**Exacum affine.** A.M. October 27, 1936. From Mr. Alfred Dawkins, Chelsea. An annual flowering plant from the Island of Socotra in the Gulf of Aden, suitable for pot cultivation in the cool greenhouse. It is a bushy, copiously branched plant 1 to 2 feet in height, with ovate, glossy, somewhat fleshy foliage and small lilac flowers, which are freely borne in the forks of the upper branchlets.

**Isotydæa** × 'Alpha.' A.M. October 13, 1936. From Major W. Van de Weyer, Dorchester. A very handsome plant for the warm greenhouse. It was raised by the exhibitor as the result of a cross between *Isotydæa* No. 2 Scarlet ♀ and *Tydæa* 'Sultan' ♂. The former is a plant of bigeneric origin also raised by the exhibitor by crossing *Tydæa* 'Sultan' ♀ and *Isoloma bogotense* ♂. The tubular flowers, borne from seven to eleven in a truss, have a vermilion tube 2 inches long terminated by five spreading cream lobes heavily spotted with brightest scarlet. The season of flowering is long and each plant carries many trusses. The leaves are medium green, ovate-lanceolate and downy. The plants are about 18 inches high.

**Isotydæa** × 'Gamma.' A.M. October 13, 1936. From Major W. Van de Weyer, Dorchester. This plant was raised from the same cross as I. × 'Alpha.' The flowers have a pink tube 2 inches long ending in five cream lobes spotted with crimson. The lobes are slightly smaller than those of I. × 'Alpha.' The flowers are freely borne in trusses of from three to five.

**Laeliocattleya** × 'Mrs. Medo' var. 'Bronze Queen.' A.M. October 6, 1936. From Messrs. J. & A. McBean, Cooksbridge. An attractive flower with thick-textured sepals and petals copper-yellow shaded with bronze; the labellum ruby-purple. Obtained by crossing *Cattleya* × 'Venus' with *Laeliocattleya* × *luminosa*.

**Oxalis variabilis.** A.M. September 29, 1936. From Mrs. H. A. Milford, Chedworth. This small herbaceous species has fleshy, softly downy, trifoliate leaves sometimes tinged beneath with purple. The erect flowers are 2 inches across and are borne singly on stalks slightly exceeding the foliage. The plants exhibited had rose-pink,



yellow-centred flowers, but forms with darker or lighter pink, or white, flowers are known.

***Petrea volubilis*.** A.M. October 27, 1936. From Sir John F. Ramsden, Bt., Gerrards Cross. A most distinct tropical American climbing shrub, first flowered in this country well over a century ago. The opposite leaves are oblong-ovate, 4 to 5 inches long, thin and of somewhat crisp texture. The flowers are carried in slender, terminal racemes a foot long. Each has a small, dark violet corolla set in a bright lavender calyx with five narrow sepals  $\frac{1}{2}$  inch long.

***Viburnum dilatatum* var. *xanthocarpum*.** A.M. September 13, 1936. From Collingwood Ingram, Esq., Benenden. An upright, bushy shrub some 6 feet in height. The leaves are suborbicular or ovate, 4 inches long, hairy and dark green. The creamy-white flowers are borne in flat corymbs 3 to 4 inches across and are succeeded by dense clusters of lustrous, pale yellow, ovoid berries. The Asiatic *V. dilatatum* is typically scarlet-fruited, and the present variety is a valuable addition to the rather limited list of yellow-fruited shrubs.

## BOOK REVIEWS.

"Practical Rose Growing in India." By B. S. Bhattacharji. 8vo. xii + 114 pp. (Thacker, Spink, Calcutta, 1935.) 5 Rupees.

"A Treatise on Rose Culture in Hyderabad-Deccan and its Suburbs." By Syed Abdul-Hafiz. 8vo. (Hyderabad [1936].) Private circulation.

Two books on rose growing in India have recently appeared and both will be valuable to those whose lot it is to make a garden there.

In the former the author has included useful chapters on the raising of new roses by Mr. Courtney Page and on rose growing in Lower Bengal by Rai Sahib A. C. Pal, as well as full directions for cultivation, propagation and exhibiting. Necessary warning concerning the behaviour of certain types of rose under Hindu conditions are a valuable part of the book, the *Pernetiana* varieties being especially difficult to grow healthily in India. Naturally many quotations are given from English writers, but all through conditions in India have been borne in mind. Many figures illustrate the text, some of them coloured.

The latter book is small and consists of a number of paragraphs dealing with the different operations in propagating and cultivating roses and giving lists of varieties successfully cultivated in and around Hyderabad-Deccan. It is sent to anyone interested.

"Soils; their Origin, Constitution and Classification: an Introduction to Pedology." By G. W. Robinson, M.A. Ed. 2. 8vo. xvii + 442 pp. (Murby, London, 1936.) 20s.

The first edition of this excellent account of the present knowledge concerning the origin and make-up of soils and their relation to the plants they bear appeared in 1932. The rapid advance of investigation has led to the need for a second edition which contains a considerable amount of new matter and considerable modification of the old. We can heartily commend it to all seeking a knowledge of the present position of investigations into soils.

"English Farming Past and Present." By Lord Ernle. New ed. by Sir A. D. Hall. 8vo. cvi + 559 pp. (Longmans, London, 1936.) 15s.

Mr. Rowland Prothero's (Lord Ernle) book on English farming and the causes that have led to its present state has gone through many editions. It is not only a valuable book but an eminently readable one, and the publishers are to be congratulated on securing the services of Sir Daniel Hall in bringing it up to date. The original work needs no praise. The name of the author of the latest additions is sufficient guarantee that the most recent part is as reliable, as full, and as interesting as the old.

"A Country Garden." By E. Armitage. 8vo. 225 pp. (Country Life, London, 1936.) 12s. 6d.

We opened this book at page 23, at an illustration labelled Birch Trees. We nearly put the book aside without further ado. The designer had so utterly failed to apprehend the character of an English birch that the print was neither ornamental nor true. Fortunately we shut our eyes to it (and later to some other illustrations) and began to read the book, and found the text greatly to our liking.

It is written simply and tells of the flowers of this country garden and of the wildings about it, with a note here and there on the birds that visit it, on the village and the country-side in which it lies, on the folk who live there or have lived there. It is written in a kindly spirit, with a quiet and kindly humour, and with an accurate and understanding knowledge of country things and of the pleasures and the trials they bring.

# EXTRACTS FROM THE PROCEEDINGS

## OF THE

### ROYAL HORTICULTURAL SOCIETY.

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#### NOTICES TO FELLOWS.

##### SUBSCRIPTIONS.

All Annual Subscriptions are payable in advance on January 1 of each year. Fellows can at any time relieve themselves of any further trouble in the matter, either by compounding by payment of a lump sum for life Fellowship, or by obtaining from the Secretary a banker's order, instructing their bankers to pay their subscription on January 1 each year.

##### CHANGE OF ADDRESS.

Fellows are reminded that it would be of material assistance to the Secretary in dispatching their tickets, plant distribution lists, JOURNAL, or any other communications that may have to be addressed to them, if any change of address, or change in bankers through whom their subscriptions are paid, is notified to him as soon as possible.

##### PLANT DISTRIBUTION.

Lists of seeds and plants available for distribution in 1936, together with the form of application for them, were distributed with the January JOURNAL. The application forms must be received on or before March 16, 1936, except from Fellows resident abroad. Should by any chance these lists and forms be mislaid, Fellows should notify the Secretary immediately so that a duplicate set of papers may be sent.

##### CALENDAR.

*February 1.*—Entries for National Diploma in Horticulture Examinations close.

*February 11, 1 to 5 P.M.*—Fortnightly Meeting and Show of Flowers in season.

At 3.30 P.M. in the Lecture Room of the New Hall, Mr. E. A. BOWLES will give a lecture on "Crocuses."

*February 25, 1 to 7.30 P.M., and February 26, 10 A.M. to 5 P.M.*—Fortnightly Meeting and Show. The Annual General Meeting will take place at 3 P.M. in the Lecture Room of the New Hall.

*March 6.*—Entries for the Chelsea Flower Show close.

*March 10, 1 to 7.30 P.M., and March 11, 10 A.M. to 5 P.M.*—Fortnightly Meeting and Show. At this show exhibits of Cymbidiums may especially be expected, in addition to Daffodils, early-flowering shrubs, Alpine house and greenhouse plants.

At 3.30 on the afternoon of March 10, in the Lecture Room of the New Hall, Capt. KINGDON WARD will speak on his expedition to the Patkoi Mountains.

*March 11 and 12, 2 to 4 P.M.*—Demonstrations at Wisley (weather permitting) on Seed Sowing—Indoors and Outdoors. Those Fellows intending to be present at this Demonstration should inform the Director, R.H.S. Gardens, Wisley, Ripley, Surrey, beforehand, mentioning the day on which they propose to attend.

*March 18.*—The General Examination in Horticulture for Seniors and Juniors will be held.

## ii PROCEEDINGS OF THE ROYAL HORTICULTURAL SOCIETY.

*March* 18 and 19, 2 to 4 P.M.—Demonstrations at Wisley (weather permitting) on Rose Pruning. Those Fellows intending to be present at this Demonstration should inform the Director, R.H.S. Gardens, Wisley, Ripley, Surrey, beforehand, mentioning the day on which they propose to attend.

*March* 24, 1 to 7.30 P.M., and *March* 25, 10 A.M. to 5 P.M.—Fortnightly Meeting and Show.

At 3.30 P.M. on *March* 24 in the Lecture Room of the New Hall, Mr. C. H. Rigg will give a lecture on "Growing Roses under Glass."

*March* 28.—The Teachers' Examination in School and Cottage Gardening will be held.

### CONFERENCE ON ALPINE PLANTS, 1936.

In co-operation with the Alpine Garden Society, a Conference on Alpine Plants is being held on May 5 to 7. On the first two days there will be a special show of Alpines in the New Hall, which will include both competitive classes for amateurs and non-competitive classes for the trade. A special schedule has been prepared for the Show and may be had on application to The Secretary, R.H.S. Offices, Vincent Square, Westminster, S.W. 1.

#### CONFERENCE PROGRAMME.

##### TUESDAY, MAY 5, 1936, AFTERNOON SESSION, 3-5.

*Chairman*.—Lord ABERCONWAY, C.B.E., V.M.H., President of the Royal Horticultural Society, supported by The Viscountess BYNG of Vimy, President of the Alpine Garden Society.

Introductory Address by the President of the Royal Horticultural Society.

"Rock Gardening of Different Periods in Different Countries," by Lady

ROCKLEY, C.B.E., and Mr. CLEVELAND MORGAN (Canada).

"The Rise of Modern Rock Gardening and its Future," by Mr. R. WALLACE.

##### WEDNESDAY, MAY 6, 1936. MORNING SESSION, 11-1 P.M.

"Utilization of Natural Slopes," by Mr. GEORGE DILLISTONE."

"Utilization of Flat Sites," by Mr. W. E. T. INGWERSEN.

##### AFTERNOON SESSION, 2.30-5.

"Cultivation of Rock Plants: General," by Mr. R. E. COOPER.

"Difficult Rock Plants," by Mr. C. T. MUSGRAVE.

##### THURSDAY, MAY 7, 1936. MORNING SESSION, 11-1 P.M.

Rock Gardening in Sunny Countries—

"Rock Gardening in South Africa," by Miss STANFORD (S.A.).

"Rock Gardening in California," by W. HERTRICH (U.S.A.).

##### AFTERNOON SESSION, 2.30-5.

"The Alpine House," by Mr. P. ROSENHEIM.

"Propagation," by Mr. M. PRICHARD.

The following are among those who have promised to take part in the discussions: Messrs. F. BARKER, J. W. BESANT, AYMON CORREVON, CLARENCE ELLIOTT, R. L. HARROW, S. JACOBS, Dr. JENKIN, Mr. GAVIN JONES, Professor LYTTEL, Messrs. R. H. MACAULAY, RENTON, Major F. C. STERN, Dr. STOKER, Capt. SYMONS-JEUNE, Messrs. J. T. WALL, BEN WELLS, JOHN WOOD.

#### PUBLICATIONS.

*Diary*.—The R.H.S. Gardeners' Diary now appears for the twenty-fifth year. In addition to the usual necessary information so important to all gardeners, space has been found for notes on Crocuses and Ornamental Grasses. Copies may be obtained from the Secretary or any bookseller. Price 2s. in cloth, 5s. in leather refillable case. Refills 1s. 6d. Postage 2d. a copy.

*Daffodil Year Book*.—The Daffodil Year Books for 1933, 1934 and 1935 are available. Price 5s. in limp covers, 6s. in stiff covers.

*Lily Year Book.*—The Lily Year Books for 1933, 1934 and 1935 are available. Price 5s. in limp covers, 6s. in stiff covers.

*Report of Apple and Pear Conference.*—Apples and Pears: Varieties and Cultivation in 1934. Price 7s. 6d.

*Report of Cherry and Soft Fruit Conference.*—Cherries and Soft Fruits: Varieties and Cultivation in 1935. Price 6s.

#### HALL LETTINGS.

Fellows may be interested to know that as in past years, the Badminton Tournaments will be held in the Old Hall from March 2 to 7. For full particulars application should be made to Mr. F. W. HICKSON, High Croft, Eversley Park Road, N. 21.

From March 24 to March 26 the London Master Bakers' Exhibition will be held in the Old Hall. The organizer of this exhibition is Mr. A. G. DAVIDSON, Ceres House, 9-13 Pentonville Road, N. 1.

#### VISIT OF THE MEMBERS OF THE FRIENDS OF THE NATIONAL LIBRARIES.

The Council of the Royal Horticultural Society have invited members of Friends of the National Libraries to visit the Lindley Library on Thursday, March 19, 1936. There will be a display of horticultural works and drawings selected to show the development of plant illustration from early days, and in addition special facilities will be given for the party to see the full extent of the Lindley Library.

#### MEMORIAL TO P. D. WILLIAMS.

The Council has decided to open a fund for the purpose of establishing a Memorial to the late P. D. Williams, V.M.H., of Lanarth, St. Keverne, the well-known horticulturist, breeder of Daffodils and cultivator of Rhododendrons. It is proposed that the Memorial should take the form of medals to be awarded in connexion with Daffodils and Rhododendrons, the two plants in which he was especially interested and with which his name is so intimately associated.

It is felt that not only all those who knew him personally, but all who appreciated the results of his work, would welcome an opportunity to contribute to the fund. Cheques and postal orders should be made payable to "The P. D. Williams Fund," crossed "Westminster Bank, Victoria Branch," and sent to the Secretary, Royal Horticultural Society, Vincent Square, London, S.W. 1. All contributions will be duly acknowledged.

#### TRIAL OF GARDEN AND LAWN SPRINKLERS.

A trial of all types of sprinkler apparatus suitable for gardens and lawns will be carried out at Wisley on April 29, 1936. Makers are invited to send their apparatus to Wisley for this trial. If desired, the senders' own assistants may be present at the trial to explain and work the machines, etc., so that they may appear to the best advantage.

A panel of competent judges will be appointed.

The hour at which the trial will commence will be communicated later, but the apparatus may be sent to Wisley any day before the trial and must be there ready for use by 9 A.M. on April 29, 1936.

The necessary entry forms may be obtained on application to the Secretary, R.H.S. Offices, Vincent Square, London, S.W. 1, or to the Director, R.H.S. Gardens, Wisley, Ripley, Surrey.

## REPORT OF THE COUNCIL

FOR THE ONE HUNDRED AND THIRTY-SECOND ANNUAL MEETING OF THE SOCIETY,  
TO BE HELD IN THE LECTURE ROOM OF THE NEW HALL, GREYCOAT STREET,  
WESTMINSTER, AT 3 P.M. ON TUESDAY, FEBRUARY 25, 1936.

**The Year 1935.**—It is satisfactory to be able to report that the increasing popularity of horticulture and of the Society continues to be shown in the figures of Fellowship. Last year Fellows and Associates of the Society numbered nearly 30,000; since then there has been a net increase of 1,768 in the numbers and the Society has attained a total of 31,648. This increase of 1,768 is the largest ever reached in the history of the Society. The greatest net increase previously reported was one of 1,672 in 1927.

LOSS BY DEATH IN 1935.				ELECTIONS IN 1935.			
Honorary Fellows	...	...	2	Honorary Fellows	...	...	11
Associates of Honour	...	...	4	Associates of Honour	...	...	3
Life Fellows	...	...	14	Life Fellows	...	...	14
4 Guinea Fellows	...	...	2	4 Guinea Fellows	...	...	25
2   "   "	...	...	237	2   "   "	...	...	1,231
1   "   "	...	...	214	1   "   "	...	...	2,303
Associates	...	...	1	Associates	...	...	111
			474	Affiliated Societies	...	...	57
							3,755
				Deaths and Resignations	...	...	1,987
				NET INCREASE	...	...	1,768
				Total on November 8, 1934			29,880
				Total on November 5, 1935			31,648

No year passes without the Society having to deplore the loss of many notable horticulturists and friends. Mr. William Robinson, the pioneer of modern English gardening, who always took a kindly and keen interest in the Society's welfare has passed away. The Society has lost five holders of the Victoria Medal of Honour: Mr. Edwin Beckett, a Member of the Fruit and Vegetable Committee and of the Shows Committee, who staged such fine exhibits of shrubs, fruits and vegetables for the late Mr. Vicary Gibbs; Mr. J. Cheal, a Vice-Chairman of the Fruit and Vegetable Committee, Member of the Joint Dahlia Committee, and a constant exhibitor at the Society's Meetings; Mr. John Fraser, the studious botanist who had attended the Fortnightly Meetings with uninterrupted regularity for many years; Sir Arthur Hort, a distinguished scholar and a keen amateur gardener; and Mr. P. D. Williams, who, amidst his varied horticultural interests, did more than anyone of his time to raise the standard of hybrid Daffodils in cultivation.

From among the Associates of Honour the Society has lost Mr. J. Cameron and Mr. G. Carpenter, both noted head gardeners, Mr. G. J. Ingram, who was associated for so many years with the Gardeners' Royal Benevolent Institution, and Mr. Joseph Jones, Curator of the Botanic Gardens in Dominica; and from among the Honorary Fellows: Señor J. E. Da Silva of Lisbon and Prof. Hugo De Vries of Lunteren, Holland. Besides these the deaths must be recorded of Mr. H. W. Clinton Baker, an enthusiastic amateur gardener and distinguished writer, of Mr. G. A. Green, Secretary, Horticultural Trades Association, New Zealand, of Dr. D. Griffiths of U.S.A., a Correspondent of the Lily Committee, of Mr. H. Somers Rivers of Messrs. T. Rivers & Son, Ltd., a Member of the Fruit and Vegetable Committee, of Mr. C. W. Needham, a member of the Narcissus and Tulip Committee, and of Mr. H. H. Smith of Messrs. Charlesworth & Co., Ltd., a Member of the Orchid Committee.

In addition to the ordinary programme of Meetings and Shows, two Conferences, one on Daffodils and the other on Cherries and Soft Fruits,

have been held and three deputations have been sent to important International Congresses.

The Fortnightly Meetings and Shows at the Halls continued to be well attended throughout the year. The groups staged have been of high quality, and the fact that they are improving in form and variety year by year has made the exhibits more and more attractive.

**The Daffodil Show.**—The Daffodil Show was held on Tuesday and Wednesday April 16 and 17. In spite of an exceptionally early spring, which at one time seemed likely to ruin the chances of a good Show, it proved to be the finest exhibition of mid-season and late varieties of Daffodils ever staged in the Society's Hall.

The Daffodil Conference held during the Show was attended by specialists from all parts of Great Britain, and by delegates from Holland, the United States and Australia. The Report of the Conference has been published in the Daffodil Year Book and contains up-to-date information concerning cultivation and the best varieties.

The Daffodil Show in 1936 will be held on Thursday and Friday, April 16 and 17.

**Early Market Produce Show.**—The fourth of a series of Shows of Early Market Produce (flowers and vegetables) was held in the Old Hall on Wednesday and Thursday, April 24 and 25. The outstanding features of the Show were the large number of non-competitive exhibits packed for the market, entries being received from Kentish, Cheltenham and South Lincolnshire growers, the Ministry of Agriculture and Fisheries' display of vegetables packed according to the National Mark standard, and the large combined exhibit which occupied the centre of the hall. On Thursday and Friday, April 16 and 17, 1936, a similar Show will be held and a discussion on "Vegetables for Pickling" has been arranged.

**The Chelsea Show.**—The Chelsea Show was held on Wednesday, Thursday and Friday, May 22, 23 and 24. In spite of the many extra calls on their time due to the Jubilee celebrations, their Majesties the King and Queen honoured the Society by a visit. There was a large attendance at the Show, which was favoured by fair weather. Deputations were present from the Dendrological Society of Sweden, from the Horticultural Society of Lombardy, and from the Garden Clubs of America, besides a great number of visitors from the Dominions and overseas in this country for the Jubilee celebrations. The New York Horticultural Society's Trophy, offered for the best exhibit of trees and shrubs shown in the open, was awarded to Messrs. Hillier & Sons, and the Jubilee Trophy (fig. 12), offered for the best exhibit staged by an amateur, was won by Mr. Lionel de Rothschild for his group of Rhododendrons. In 1936 the Show will be held on Wednesday, Thursday and Friday, May 20, 21 and 22.

**The Amateurs' Flower Show.**—The eleventh Amateurs' Flower Show was held on Tuesday, June 25. To the May frosts may be attributed some decline in the number of entries and in the quality of the exhibits. The 1936 Show has been arranged for Tuesday, June 30.

**Cherry and Soft Fruit Show and Conference.**—On the occasion of the Fortnightly Meeting on Tuesday and Wednesday, July 16 and 17, a special Show of Cherries and Soft Fruits was arranged in the Old Hall under the auspices of the Kent Branch of the National Farmers' Union. Despite the season there was a better display than has ever before been brought together either in the country or in London. The Conference was held during the Show, when Sir Daniel Hall, on behalf of the President, presided over the Meetings. The Report of this Conference has been published by the Society under the title of "Cherries and Soft Fruits—Varieties and Cultivation in 1935."

**The Autumn Show.**—The Autumn Show was held in the National Hall of Olympia on Wednesday, Thursday and Friday, September 25, 26, and 27. The floor space was occupied to overflowing and some of the exhibits had to be accommodated in a portion of the Empire Hall. The attendance was excellent.

**Exhibition of Paintings and Drawings.**—A special Exhibition of Paintings and Drawings of Plants, Flowers and Gardens was held in the Society's Old Hall on Tuesday, Wednesday and Thursday, October 15, 16, and 17, at which very many beautiful and interesting paintings and drawings were shown. The

Council is particularly grateful to the members of the Selection and Hanging Committee for the time they gave and for the work they did for the Society.

**The Lily Group.**—During the year the Lily Group held four meetings, and the reports of the discussions which took place at three of them have been published in the Lily Year Book for 1935. On July 13 a party of members of the Group visited the gardens of Mr. C. R. Scrase-Dickins at Coolhurst, Horsham, and of Lt.-Colonel L. C. R. Messel at Nymans, Handcross.

**Wisley : The Garden.**—During the year the collection of plants has been considerably increased. The standard collections have been overhauled and new varieties that have received Awards of Merit have replaced those of less garden value. The late frosts which occurred in mid-May caused considerable damage to the foliage and flowers of many plants, which in some instances were in an advanced stage of growth. A general account of the damage done and a reference to the plants that resisted the mid-May frosts was published in the October number of the JOURNAL.

**Alterations.**—The wide grass walk from the Fruit Exhibition Room to the western extremity of the Garden—"King's Avenue"—has been further developed and a seat with a shelter hedge has been erected at the western end. The borders to this walk have been planted with a collection of garden roses.

The garden water supply has been reconstructed and water in ample quantities is now available at the most important parts of the Garden; a system of sprays has been installed in the rock garden supplying a fine mist over the whole area.

The lavatory accommodation has been improved and enlarged and is now housed in the buildings at the lower entrance gate.

**Visitors.**—Among other visitors the Society has entertained at Wisley several large parties from the Continent and overseas—namely, the Swedish Dendrological Society, members of a party of the American Garden Clubs, members of the Horticultural Society of Lombardy, members of the Institute of Journalists, the Guild of Trade Horticulturists, and a number of those attending the Daffodil Conference.

**Flower and Vegetable Trials.**—The floral trials held during 1935, besides those connected with the standard collections, were of Verbenas, Petunias and Annual Coreopsis. The weather suited these plants and the large trial beds proved a very bright and attractive feature in the Garden.

Trials of Spinach, Beet, Maincrop Potatoes and Savoys were also made, and the Asparagus experiments were continued.

**Commercial Fruit Trials.**—The trials of hardy fruits have been continued, occupying some 38 acres of land at the northern end of the Garden. The severe frosts in May ruined all prospects of good crops. New varieties have been accepted for trial and additional sub-stations for trials have been established in Berkshire and Hampshire. The fruit collections maintained by the Society have been increased.

Experiments have been conducted with "Harrington" orchard heaters in the Fruit Trial Grounds and will be continued next season.

Pollination experiments with fruit trees are in progress in the Orchard House.

**Collection of Pears.**—The standard collection of Pears is being removed from the main Hardy Fruit Trial Ground, and a new collection for naming purposes specially grown on cordons will be planted on the higher land above the Floral Trial Ground.

**Demonstrations of Practical Garden Operations.**—These demonstrations continue to prove of great interest to the Fellows and are well attended. A similar programme of demonstrations has been arranged for 1936, particulars of which will be found in the Society's calendar (p. 1).

**The Wisley Laboratories : Investigations and Experiments.**—The various lines of investigation and experiment have made satisfactory progress during the year. Reports on the work have been published, among them one on the germination of Rose seeds published in the Society's JOURNAL, and one on the Lily experiments by the Keeper of the Laboratory published in the Lily Year Book.



The Entomologist has studied an outbreak of *Phylloxera* which occurred on vines in Berkshire. Many years have elapsed since this pest was recorded in this country.

The principal work of the Mycologist has been in connexion with the Antirrhinum rust. Experiments to test the efficiency of various sprays have been carried out and a series of rust-resistant plants has been grown and tested (p. 64). This work will be continued in 1936.

The investigation of *Narcissus* diseases has now been brought to a conclusion and a report prepared for publication in the JOURNAL.

**Advisory Work.**—An increased number of inquiries has been a marked feature of the year's advisory work. The Entomologist and Mycologist have broadcast popular talks on their respective subjects. Demonstration exhibits have been staged at the Society's Shows and by request at other flower shows.

**Trials.**—A successful trial of spraying machines for gardens, orchards and fields was held and judged, and a trial of garden and lawn sprinklers is being arranged for 1936.

**School of Horticulture.**—Two Wisley candidates gained the National Diploma in Horticulture and two old students gained the National Diploma in the Parks Section; of present students, seven passed the preliminary examination for the National Diploma besides other successes in the Teachers' Preliminary and Final Examinations.

The Council is very glad to be able to report that all the student gardeners who left Wisley during the year have been successful in obtaining posts.

**Lectures.**—The Council records its grateful thanks to the lecturers who have assisted at the Fortnightly Meetings, and especially to Sir William Wright Smith, who delivered the Masters Memorial Lectures on "Problems connected with the Classification of Plants." Dr. Redcliffe N. Salaman, Director of the Potato Virus Research Station, Cambridge, will deliver the Masters Memorial Lectures for 1936 on Tuesday, October 27, when he will speak on "The History of the Potato from the Time of its Introduction into Europe," and on Tuesday, November 10, when he will speak on "The Introduction and Spread of the Potato in Europe, and its Subsequent Development."

**Deputations.**—The Society was represented by Mr. F. J. Chittenden at the International Botanical Congress at Amsterdam, and the International Horticultural Congress at Rome was attended by Dr. A. B. Rendle, Mr. G. W. Leak and Mr. F. J. Chittenden on behalf of the Society.

At the Botanical Congress the Society was particularly interested in the appointment of a committee to draw up a list of valid botanical names of important economic plants, which would remain in force for ten years.

In preparation for the Horticultural Congress at Rome a special committee of the Society, under the Chairmanship of the President, drew up a list of names of plant species generally in cultivation, based on the Kew Hand-Lists, monographs, and other works of authority. This list was submitted to the Congress and was accepted as an authoritative list to remain in force for six years.

Steps are being taken to draw the attention of horticulturists and especially of compilers of trade catalogues to this list.

It is hoped that this action will reduce a certain confusion which exists in the names of species in several genera.

At an International Congress on Entomology on September 6 to 12 at Madrid, the Society was represented by Mr. G. Fox Wilson of the Wisley staff.

At the Heemstede Jubilee Show in Holland on March 14 to 16, the Society was represented by Mr. G. W. Leak, Mr. R. D. Trotter and the Secretary.

A deputation visited the Leicester and Leicestershire Horticultural Society's Show on July 26. The Society was represented by Mr. T. Hay and Mr. G. W. Leak.

The Council desires to place on record its thanks for the assistance and the kind hospitality shown to the members of its deputations.

**Universal and International Exhibition at Brussels, 1935.**—The Council appointed a special committee to act with the Department of Overseas Trade in respect to the laying out of an English garden at the Universal and International Exhibition held at Brussels in April.

**Jubilee Medal.**—In commemoration of Their Majesties' Silver Jubilee a special silver medal, designed by Mr. J. A. Woodford and struck at the Royal Mint, was distributed to affiliated societies as the premier award at their shows. This has been greatly appreciated and over 350 of them awarded the medal (fig. 13).

**The Society's Publications.**—The experiment of issuing the Society's JOURNAL as a monthly publication has met with success and many appreciative letters have been received from Fellows. The Council is desirous of drawing particular attention to the pages containing "Notices to Fellows," as this is the vehicle for calling the attention of Fellows to additions or modifications in the year's programme.

Among other of the Society's publications that have appeared are: the "Lily Year Book for 1935"; the "Daffodil Year Book for 1935," which contains the Report of the Conference on Daffodils; "Cherries and Soft Fruits—Varieties and Cultivation in 1935," being the Report of the Conference on these fruits and forming a companion volume to "Apples and Pears—Varieties and Cultivation in 1934."

The Index to all the volumes of the JOURNAL and the Index to Curtis's Botanical Magazine from the commencement are in active preparation and it is hoped that the former will be published in 1936.

The JOURNAL Index will, in addition to its other uses, form a ready reference to the Awards granted to plants and to sundries by the Society.

**The Lindley Library.**—During the past twelve months the Library has been visited by about 1,350 visitors and 1,640 books have been lent. Four hundred books and pamphlets have been added, amongst which may be mentioned: Burmann, N. L., "Flora Indica: [cui accedit . . . prodromus florae Capensis," 1768; Byam, L., "Collection of fruits from the West Indies," 1800; "Dictionary of National Biography," 67 vols. (including Supplement), 1885-1904; Hayek, A., and Markgraf, Fr., "Prodromus florae peninsulae Balcanicae" (3 vols.), 1924-33; "Hi-shui hyakku fu" (one hundred flowers painted by Sugiura Hishui), 1931-34; Lonitzer, A., "Botanicon," 1565; "Lustgärten und Pfützungen," 1530, probably the earliest German printed work on gardening; "Meehan's Monthly," a magazine of horticulture etc. (12 vols.), 1891-1902; "Nouvelle Biographie générale," ed. J. Ch. F. Hoefer, 46 vols. (in 23), 1855-66; Plenck, J. J., "Icones plantarum medicinalium," vols. 1-5, 1788-92; Reichenbach, H. G. L., "Iconographia botanica" (10 vols.), with uncoloured plates, 1823-32; Russell, A., "Natural History of Aleppo," 1756; Sims, T. R., "The forests and forest flora of . . . the Cape of Good Hope," 1907; Spach, Ed., "Histoire naturelle des végétaux, Phanérogames" (15 vols.), 1834-48; Sturm, J., and others, "Deutschlands Flora in Abbildungen (25 vols.), 1796-1849; Viala, P., and others, "Traité général de viticulture" (6 vols.), 1901-10.

Some valuable additions have been made to the illustrations of garden plants in the Lindley Library by the purchase of original paintings of Irises on the dispersal of the late Miss Willmott's Library, of garden varieties of Narcissi from Mr. W. F. M. Copeland, and of about a hundred Fritillaries made by Lt.-Com. J. P. W. Furse, R.N., all of them faithful and artistic reproductions of the plants they represent.

**The Society's Examinations.**—The entries for 1935 showed a very marked increase over those of the previous year. Seven candidates were awarded the National Diploma in Horticulture in Section 1 (General Horticulture), two in Section 6 (Gardening in Public Parks), and one in Section 7 (Horticultural Inspection). Twenty-four candidates passed the Preliminary Examination for the National Diploma in Horticulture and will be eligible for the Final Examination when they have completed six years of practical gardening.

In the General Examination, certificates were awarded to 239 Senior candidates and 105 Junior candidates. Twelve candidates passed the Teachers' Advanced Examination, and 252 candidates passed the Teachers' Preliminary Examination and are now eligible for the Advanced section.

Since its inauguration in 1933, the British Floral Art Diploma has been conferred on 54 successful candidates.

**Expeditions.**—At the close of the year 1934 the Society subscribed to Captain F. Kingdon Ward's expedition to the Patkoi Mountains, and in 1935 to an expedition to the Caucasus Mountains, under Dr. P. L. Giuseppe and Mr. W. E. T. Ingwersen.

**The Victoria Medal of Honour.**—The Victoria Medal of Honour was awarded in the beginning of the year to Mr. Amos Perry, a member of Floral Committee B. and the Joint Iris Committee, the medal being presented at the Annual Meeting on February 19, 1935, and in November to Sir Daniel Hall, K.C.B., LL.D., D.Sc., F.R.S., a Vice-President of the Society, for his scientific work in connexion with horticulture; to Mr. W. B. Cranfield, F.L.S., a keen amateur gardener and raiser of new plants, who has taken an active part in the Society's work during a long period of years; and to Mr. C. F. Langdon, for his work in the advancement of the Begonia and Delphinium.

**The Associateship of Honour.**—The Associateship of Honour has been conferred on Mr. H. J. Moore, Horticultural Consultant to the Ontario Government, on Mr. F. Tustin, Head Gardener at Abbotswood, Stow-on-the-Wold, and on Mr. John Wort of Messrs. Dickson & Robinson, Ltd.

**The Lawrence Medal.**—The Lawrence Medal for the best exhibit staged at the Society's Shows during the year has been awarded to Messrs. Sutton & Sons, Ltd., for their exhibit of Greenhouse Plants from Seeds staged at the Chelsea Show on May 22, 23 and 24, 1935.

**The Holford Medal.**—The Holford Medal for the best exhibit of plants and/or flowers (fruit and vegetables excluded) shown by an amateur during the year in the Halls of the Society has been awarded to Dr. F. Craven Moore for the exhibit of *Cypripedium* hybrids raised by himself and staged on January 8, 1935.

**The Veitch Memorial Medals.**—Awards have been made as follows: A Gold Medal to Lord Wakehurst for his services to Horticulture; a Gold Medal to Dr. E. J. Salisbury for his book, "The Living Garden"; a Gold Medal to Mr. A. D. Cotton for his services to Horticulture; and a Silver Medal to Mr. E. H. Woodall for his services to Horticulture.

**The Sander Medal.**—The Sander Medal has been awarded to Messrs. Clarence Elliott, Ltd., for *Kalanchoe Blossfeldiana*, shown on April 2, 1935, which was considered to be the best new greenhouse plant shown to the Society in the course of the year.

**The George Moore Medal.**—The George Moore Medal has been awarded to Mr. Lionel de Rothschild for *Cypripedium* 'Balaclava,' shown on November 5, 1935, which was considered to be the best new *Cypripedium* shown to the Society in the course of the year.

**The Williams Memorial Medals.**—The Williams Memorial Medals for the best groups of plants and/or cut blooms of one genus (fruit and vegetables excepted) which show excellence in cultivation exhibited during the year have been awarded to Messrs Sutton & Sons, Ltd., for their exhibit of Cyclamen on November 26, 1935, and to Messrs. R. Bolton & Son for their exhibit of Sweet Peas staged at the Chelsea Show on May 22, 23, and 24, 1935.

**The Reginald Cory Cup.**—The Reginald Cory Cup for the raiser of the best new hardy plant of garden origin shown to the Society in the course of the year has been awarded to Mr. Lionel de Rothschild for his Rhododendron 'Albatross,' Exbury variety (*R. discolor* × *R. Loderi*), shown on June 4, 1935.

**The Loder Rhododendron Cup.**—The Loder Rhododendron Cup has been awarded to Mr. A. Rehder, A.M., of the Arnold Arboretum, U.S.A., who, by his writings, has added so much to the knowledge of the Genus Rhododendron.

**The Sherwood Cup.**—The Sherwood Cup for the most meritorious exhibit at the Chelsea Meeting was awarded to Messrs. Sutton & Sons, Ltd., for their exhibit of Greenhouse Plants from Seeds.

**The Coronation Cup.**—The Coronation Cup for the best exhibit other than Roses at the Autumn Show at the National Hall, Olympia, was awarded to Messrs. Bees, Ltd., for their mixed group of Herbaceous Plants, Gladioli and Lilies.

**Gifts to the Society.**—The Council desires to express its gratitude to many Fellows and friends of the Society for gifts of books, plants and seeds. It desires

to thank the Ministry of Agriculture and Fisheries for their kind co-operation in, and gift of cups for, the Early Market Produce Show in 1936; the Fruit-grower, Fruiterer, Florist and Market Gardener for the offer of a medal for the Early Market Produce Show in 1936; and the Orchid trade for the presentation of two trophies, one for *Cypripediums* and one for *Odontoglossums*, to be competed for by amateurs.

The Council also desires to record its thanks to Mr. Horace Sanders for the gift of books, etc., belonging to the late Mr. T. W. Sanders, to Colonel R. V. Berkeley for the presentation of books, pamphlets and old trade catalogues which belonged to the late Miss Willmott, and to the Countess Margherita Martelli for a collection of the publications of the late Count Ugolino Martelli.

**Retiring Members of Council.**—The Council desires to record its appreciation of the valuable services rendered during their term of office by the retiring Members of Council—Lord Wakehurst, Mr. T. Hay and Mr. G. W. Leak—and is glad to know that their help and advice will still be available to the Society and to the Committees of which they are members.

**The Press.**—The Council takes this opportunity of reiterating its warm appreciation of the goodwill shown to the Society by the Press, and of the assistance the Society always receives from this source.

**Committees, Judges and Examiners.**—The Society is greatly indebted to the members of the various Committees, to the Judges and to the Examiners who have given so much of their time to the work they have so successfully undertaken.

**Staff.**—The Council greatly appreciates the diligent and loyal work of the Secretary and the members of the staff at Vincent Square and of Mr. Harrow and his staff at Wisley.

Signed on behalf of the Council,

ABERCONWAY,  
*President.*

*December 31, 1935.*

ACCOUNTS  
AND  
BALANCE SHEET.

Dr.

## ANNUAL REVENUE &amp; EXPENDITURE ACCOUNT

	£	s.	d.	£	s.	d.
To LONDON—						
ESTABLISHMENT EXPENSES LESS ALLOCATIONS—						
Rent, Rates and Taxes . . . . .	3,057	1	11			
Salaries and Wages . . . . .	7,130	14	3			
Other Establishment Expenses, including Light, Fuel, Stationery, Professional Fees, and Renewals . . . . .	4,771	15	11			
				14,959	12	1
„ WISLEY—						
Net Expenditure for Year, as per separate Account . . . . .				13,896	12	0
„ PRINTING AND POSTAGE OF JOURNAL AND OTHER PUBLICATIONS . . . . .	8,739	4	2			
Less Sales and Advertisements . . . . .	3,273	4	5			
				5,465	19	9
„ STAFF PENSIONS . . . . .	1,156	10	0			
Less Contributions by Staff, as per Scheme . . . . .	487	13	0			
				668	17	0
„ MEETINGS—						
Expenses Labour and Overheads of Special and Other Meetings . . . . .	3,611	10	6			
Less Receipts . . . . .	376	12	0			
	3,234	18	6			
Spring Meeting :						
Expenses Labour and Overheads . . . . .	7,312	0	11			
Receipts . . . . .	7,990	8	9			
				678	7	10
Autumn Show :				2,556	10	8
Expenses Labour and Overheads . . . . .	2,956	16	4			
Receipts . . . . .	2,291	14	3			
				665	2	1
„ CUPS AND MEDALS . . . . .				3,221	12	9
				591	7	1
„ GARDEN INSPECTIONS—						
Expenditure less Receipts . . . . .				27	11	0
CONTRIBUTION TO LINDLEY LIBRARY, as per Trust Account—						
Purchase of Books . . . . .	594	17	0			
Salaries, etc. . . . .	502	10	2			
				1,097	7	2
„ SPECIAL EXPENDITURE—						
E. K. Balls Expedition . . . . .	25	0	0			
Kingdon Ward Expedition . . . . .	73	10	0			
Giuseppi and Ingwersen Expedition . . . . .	25	0	0			
Donation, Royal Geographical Society . . . . .	10	0	0			
„ British Colour Council . . . . .	5	5	0			
„ London Children's Gardens . . . . .	10	10	0			
„ Gardeners' Royal Benevolent Inst. . . . .	52	10	0			
„ Royal Gardeners' Orphan Fund . . . . .	21	0	0			
„ King George's Jubilee Trust . . . . .	105	0	0			
„ Flowers, Fruit and Vegetable Publicity Committee . . . . .	50	0	0			
„ Portrait Fund, Sir Peter Chalmers Mitchell . . . . .	5	5	0			
„ Cheshunt Experimental Station . . . . .	21	0	0			
XIth International Horticultural Congress . . . . .	194	3	1			
Cherry and Soft Fruit Conference . . . . .	99	1	4			
Daffodil Conference . . . . .	78	6	7			
Portrait, William Robinson . . . . .	42	0	0			
Pritzel Revision (Index Londinensis) . . . . .	458	18	3			
Secondary Lighting Installation, Greycoat Street . . . . .	233	10	0			
Appropriation Reserved for Journal Index . . . . .	500	0	0			
				2,009	19	3
Carried forward . . . . .				£41,938	18	1

**FOR THE YEAR ENDED 31st DECEMBER, 1935.**

**Cr.**

	£	s.	d.	£	s.	d.
By ANNUAL SUBSCRIPTIONS . . . .				47,088	15	8
„ DIVIDENDS AND INTEREST . . . .	852	6	7			
„ Do. Do. DAVIS TRUST . . . .	51	8	10			
„ DEPOSIT INTEREST . . . . .	125	10	1	1,029	5	6
„ HALL LETTINGS, GROSS . . . . .				7,817	4	3
„ LIFE COMPOSITIONS— Being amounts paid by Fellows who have died during the year . . . . .				430	10	0
„ RENT OF FREEHOLD PROPERTY (Wisley) . .				300	13	0

Carried forward

126 566 2

Dr.

## ANNUAL REVENUE &amp; EXPENDITURE ACCOUNT

	£	s.	d.	£	s.	d.	£	s.	d.
Brought forward .	.	.	.	.	.	.	41,938	18	1
To BOTANICAL MAGAZINE . . . . .	.	.	.	770	16	7			
Add Work in Advance . . . . .	.	.	.	150	1	6			
							920	18	1
„ EXAMINATIONS IN HORTICULTURE—									
Expenses . . . . .	.	.	.	621	14	1			
Less Fees . . . . .	.	.	.	582	11	6			
							39	2	7
„ GENERAL SCHOLARSHIPS . . . . .	.	.	.	142	3	4			
Less Contribution from the Knott Scholarship Fund . . . . .	30	0	0						
Less Contribution from the Wor- shipful Company of Gardeners . .	60	0	0						
				90	0	0			
							52	3	4
„ OLD AND NEW HALLS SINKING FUND APPRO- PRIATION . . . . .	.	.	.				3,366	0	0
„ RESTAURANTS—									
Deficit after charging Proportion of Overhead Expenses . . . . .	.	.	.				939	7	8
„ BALANCE, being Excess of Revenue over Expen- diture, carried to Balance Sheet . . . .							9,409	18	8
							£56,666	8	5



**FOR YEAR ENDED 31st DECEMBER, 1935—continued.**

Cr.

	£	s.	d.
Brought forward . . .	56,666	8	5

£56,666 8 5

# ROYAL HORTICULTURAL SOCIETY—

## LIABILITIES.

	£	s.	d.	£	s.	d.
CAPITAL FUNDS ACCOUNT . . . . .				239,981	0	1
LIFE COMPOSITIONS as at 31st December, 1934 .	14,369	5	0			
<i>Less</i> Fees paid by Life Fellows who have died during the year . . . . .		430	10	0		
				13,938	15	0
<i>Add</i> Life Compositions paid during the year .	593	5	0			
				14,532	0	0
SUNDRY CREDITORS . . . . .				3,798	19	4
SUBSCRIPTIONS PAID IN ADVANCE . . . . .				698	14	8
DEPRECIATION AND RENEWALS FUND . . . . .				10,000	0	0
OLD AND NEW HALLS SINKING FUND . . . . .				14,233	19	3
WEATHER INSURANCE FUND . . . . .				3,000	0	0
SUPPLEMENTARY PENSION FUND . . . . .				2,647	4	6
RESERVE AGAINST DEPRECIATION OF INVESTMENTS				1,964	2	4
MEMORIAL AND OTHER TRUST FUNDS—						
Balances in the hands of the Society as per Separate Schedule . . . . .				376	10	3
REVENUE AND EXPENDITURE ACCOUNT—						
Balance as at 31st December, 1934 . . . . .	11,411	13	4			
<i>Add</i> Balance of Revenue and Expenditure Account, 31st December, 1935 . . . . .		9,409	18	8		
				20,821	12	0
				£312,054	2	5

# BALANCE SHEET, 31st DECEMBER, 1935.

## ASSETS.

	£	s.	d.	£	s.	d.
CAPITAL EXPENDITURE—						
Old Hall, Offices, Restaurant, Library, and Equipment . . . . .	77,642	0	0			
New Hall, Restaurant and Equipment . . . . .	167,706	2	10			
				245,348	2	10
FREEHOLD PROPERTY, WISLEY . . . . .				13,103	2	11
BOTANICAL MAGAZINE—						
Stock . . . . .				100	0	0
DEPRECIATION AND RENEWALS FUND INVESTMENTS AT COST . . . . .						
				10,000	0	0
(Market value of Investments at 31st December, 1935, £10,573 os. 7d.)						
OLD AND NEW HALLS SINKING FUND INVESTMENTS AT COST—						
Investments as at 31st December, 1934 . . . . .	10,504	12	9			
Additions during 1935 . . . . .	3,729	6	6			
				14,233	19	3
(Market value of Investments at 31st December, 1935, £14,435 6s. 4d.)						
WEATHER INSURANCE FUND INVESTMENTS AT COST . . . . .						
				3,000	0	0
(Market value of Investments at 31st December, 1935, £3,199 12s. 0d.)						
SUPPLEMENTARY PENSION FUND INVESTMENTS AT COST—						
Investments as at 31st December, 1934 . . . . .	2,250	6	0			
Additions during 1935 . . . . .	396	18	6			
				2,647	4	6
(Market value of Investments at 31st December, 1935, £3,179 10s. 11d.)						
DEPRECIATION OF INVESTMENTS FUND INVESTMENTS AT COST . . . . .						
				1,964	2	4
(Market value of Investments at 31st December, 1935, £2,024 3s. 7d.)						
GENERAL INVESTMENTS AT COST:						
Investments as at 31st December, 1934 . . . . .	7,592	3	1			
Additions during 1935 . . . . .	10,005	8	9			
				17,597	11	10
(Market value of Investments at 31st December, 1935, £17,843 4s. 11d.)						
WISLEY ADJUSTMENT ACCOUNT. . . . .				366	0	10
SUNDRY DEBTORS AND PAYMENTS IN ADVANCE . . . . .				3,207	0	3
CASH AT BANK AND IN HAND . . . . .				486	17	8
				<u>£312,054</u>	<u>2</u>	<u>5</u>

I have audited the books from which the foregoing Accounts are compiled, and certify that they exhibit a true and correct statement of the position of the Society on the 31st December, 1935. In the total of Assets, £312,054 2s. 5d., are included Investments and Cash amounting in all to a total sum of £32,221 16s. 4d., representing Depreciation and other Funds which are not available for the general purposes of the Society.

J. S. FEATHER, F.C.A., Auditor  
(HARPER, FEATHER & PATERSON, Chartered Accountants),  
35 Great Tower Street, London, E.C. 3.

Dr.

## WISLEY GARDENS—REVENUE &amp; EXPENDITURE

	£	s.	d.	£	s.	d.
To ESTABLISHMENT EXPENSES—						
Salaries and Wages . . . . .	2,518	15	11			
Rates, Taxes and Insurance . . . . .	376	15	8			
Miscellaneous, including Donations . . . . .	765	0	11			
Annuities . . . . .	91	0	0			
				3,751	12	6
,, LABORATORY AND SCHOOL OF HORTICULTURE—						
Salaries and Wages . . . . .	2,388	2	11			
Miscellaneous . . . . .	96	18	5			
Depreciation . . . . .	67	9	0			
				2,552	10	4
,, GARDEN—						
Salaries and Wages . . . . .	6,356	8	8			
Plant Distribution . . . . .	780	18	4			
Miscellaneous . . . . .	994	19	7			
Depreciation . . . . .	524	11	1			
				8,656	17	8
,, STAFF PENSIONS . . . . .						
	560	3	7			
Less Contributions by Staff, as per Scheme . . . . .	280	2	0			
				280	1	7
				£15,241	2	1
To BALANCE, brought down . . . . .						
				12,251	2	11
,, SPECIAL EXPENDITURE—						
Water and Electrical Supplies and Lavatory Accommodation . . . . .				1,645	9	1
				£13,896	12	0

# ACCOUNT FOR YEAR ENDED 31st DECEMBER, 1935.

Cr.

	£	s.	d.	£	s.	d.
By DIVIDENDS AND INTEREST . . . . .				1,174	18	2

## „ CONTRIBUTIONS TO FRUIT TRIALS, 1934—

Ministry of Agriculture . . . . .	485	0	0			
Worshipful Company of Fruiterers . . . . .	26	5	0			
National Farmers' Union . . . . .	85	0	0			
				596	5	0

## „ GARDEN—

Sales and Miscellaneous Receipts . . . . .	452	6	7			
Prepaid Distribution, Postages and Packing Fees . . . . .	766	9	5			
				1,218	16	0

„ BALANCE, carried down . . . . .				12,251	2	11
-----------------------------------	--	--	--	--------	---	----

£15,241 2 1

„ BALANCE, being Net Expenditure for year, carried to the Annual Revenue and Expenditure Account . . . . .

13,896 12 0

£13,896 12 0

# WISLEY GARDENS—BALANCE

LIABILITIES.			
	£	s.	d.
CAPITAL FUNDS ACCOUNT . . . . .	35,870	7	8
VINCENT SQUARE ADJUSTMENT ACCOUNT . . . . .	366	0	10
ENDOWMENT TRUST FUND . . . . .	23,493	1	7
DEPRECIATION AND RENEWALS FUND . . . . .	8,149	14	4
	<hr/> £67,879 4 5		

# SHEET, 31st DECEMBER, 1935.

## ASSETS.

	£	s.	d.	£	s.	d.
<b>CAPITAL EXPENDITURE—</b>						
Laboratory, Dwelling Houses, Glass Houses, Ranges, etc. . . . .				33,371	10	10
N.B.—The Hanbury Trust Estate is, under the Trust Deed, vested in the Society only so long as it is in a position to use it as an Experimental Garden. Accordingly the Expenditure thereon by the Society is an Asset only so long as the Gardens continue to be used by the Society.						
<b>FUEL STOCK (valued by the Director) . . . .</b>				59	10	0
<b>PLANT, LIVE STOCK AND LOOSE EFFECTS (valued by the Director)—</b>						
As at 31st December, 1934 . . . . .	2,393	15	10			
Add Purchases during 1935 . . . . .	95	11	6			
	2,489	7	4			
Less Depreciation of Garden and Laboratory . . . . .	342	0	1	2,147	7	3
<b>LIBRARY—</b>						
As at 31st December, 1934 . . . . .	611	19	9			
Additions during 1935 . . . . .	46	0	8	658	0	5
<b>ENDOWMENT TRUST FUND INVESTMENTS AT COST</b>				23,493	1	7
(Market value of Investments at 31st December, 1935, £24,760 os. 8d.)						
<b>DEPRECIATION AND RENEWALS FUND INVESTMENTS AT COST—</b>						
Investments as at 31st December, 1934 . . . . .	7,899	14	4			
Additions during 1935 . . . . .	250	0	0	8,149	14	4
(Market value of Investments at 31st December, 1935, £9,740 6s. 7d.)						
				£67,879	4	5

I have audited the books from which the foregoing Accounts are compiled, and certify that they exhibit a true and correct statement of the position on the 31st December, 1935. In the total of Assets, £67,879 4s. 5d., are included Investments, amounting to £31,642 15s. 11d., representing Endowment and Depreciation Funds which are not available for the general purposes of the Society.

J. S. FEATHER, F.C.A., *Auditor*

(HARPER, FEATHER & PATERSON, *Chartered Accountants*),  
35 Great Tower Street, London, E.C. 3.

7th January, 1936.

# ROYAL HORTICULTURAL SOCIETY—TRUST

	Amount of Fund represented by Investments at Cost.			Income Balance in hand 31st Dec., 1934.		
	£	s.	d.	£	s.	d.
1. ALFRED DAVIS TRUST FUND . . .	946	0	3	<i>nil</i>		
2. WILLIAMS MEMORIAL FUND . . .	246	6	10	16	5	8
3. MASTERS MEMORIAL FUND . . .	542	17	0	124	10	10
4. NICHOLSON MEMORIAL FUND . . .	196	1	5	<i>nil</i>		
5. SCHRÖDER PENSION FUND . . .	557	14	6	6	6	8
6. LINDLEY LIBRARY TRUST . . .	13,535	8	4 (a)	<i>nil</i>		
7. SIR JAMES KNOTT TRUST . . .	600	0	0	89	10	3
8. VEITCH MEMORIAL TRUST FUND . . .	1,718	3	7	125	11	11
9. MOORE MEDAL TRUST . . .	190	10	6	11	5	11
10. SEWELL MEDAL TRUST FUND . . .	527	10	3	9	5	
11. MRS. SHERMAN HOYT PRIZE FUND . . .	207	7	10	15	19	8
12. LORD RIDDELL TROPHY FUND . . .	175	0	0	2	14	3
13. DEDICATIONS VOLUME FUND (Botanical Magazine) . . .	159	18	3 (c)	<i>nil</i>		
14. THE COLMAN FUND . . .	1,035	11	1	<i>nil</i>		

## Notes on above Funds :

1. Bequeathed to the Society in 1870 for annual prizes or any other object the Council may determine.
2. Raised by donations in 1891 in memory of the late Mr. B. S. Williams towards the provision of prizes and medals.
3. Raised by donations in 1908 in memory of the late Dr. Masters towards the provision of one or more annual lectures.
4. Raised by donations in 1908 in memory of the late Mr. Geo. Nicholson to provide prizes for Wisley students.
5. Provided by the Society in memory of the late Baron Schröder to pay to the Gardeners' Royal Benevolent Institution for one pension.
6. The nucleus of the library is the fine collection of books and pamphlets which belonged to the late Dr. Lindley. It has since been added to by the books purchased by the Society and by the gifts of private donors.
7. Presented to the Society in 1920 by the late Sir James Knott for the purpose of providing a scholarship tenable at Wisley.



# FUND ACCOUNTS, 31st DECEMBER, 1935.

Dividends and Interest received during 1935.			Expenditure in 1935 in accordance with the Trust.			Income Balance in hands of R.H.S. 31st Dec., 1935.						
£	s.	d.	£	s.	d.	£	s.	d.		£	s.	d.
51	8	10	51	8	10	nil			(a) Investment	1,458	15	7
9	12	2	9	6	7	16	11	3	Additions during			
21	5	0	20	0	0	125	15	10	1935	50	0	0
6	5	3	6	5	3	nil				1,508	15	7
20	0	0	20	0	0	6	6	8	Cost of Books purchased by the			
555	7	9 (b)	555	7	9	nil			Society up to			
25	3	0	30	0	0	84	13	3	31st Dec., 1934	11,431	15	9
60	2	3	79	0	6	106	13	8	Books purchased			
7	16	6	10	1	6	9	0	11	by the Society			
24	2	10	24	8	6	0	3	9	in 1935	594	17	0
10	8	1	11	15	0	14	12	9		£13,535	8	4
7	12	9	7	5	6	3	1	6	(b) Includes contribution by the			
9	10	8 (d)	nil			9	10	8	Society in 1935, £502 10s. 2d.			
35	11	1 (e)	35	11	1	nil			(c) Includes investment of amount			
Total as per Balance Sheet						£376	10	3	received in 1934 from sales and			
									interest, £20 13s. 9d.			
									(d) Includes proceeds of sales			
									during 1935 amounting to			
									£4 to be invested.			
									(e) Invested and added to Fund.			

8. Instituted in 1870 in commemoration of the late Mr. James Veitch for the encouragement of Horticulture. Fund vested in Society in 1922.

9. Presented to the Society in 1926 by the late Mr. G. F. Moore to provide a medal annually for the best new Cypripedium shown to the Society during the year.

10. Presented to the Society in 1928 by the late Mr. A. J. Sewell to provide medals for Rock Garden Plants.

11. Presented by Mrs. A. Sherman Hoyt in 1929 as a donation and funded by the Society to provide prizes for the encouragement of the growth of Cacti and Succulents.

12. Presented by the late Lord Riddell in 1931 to provide a trophy annually to be awarded for vegetables.

13. Proceeds of the sale of Curtis's Botanical Magazine Dedications, 1827-1927, presented in 1932 to the Society by the late Mr. William Cuthbertson, V.M.H., to be devoted to publications.

14. Presented to the Society in 1935 by Sir Jeremiah Colman, Bt., V.M.H., to be used for the improvement of flowers or fruit.

# ROYAL HORTICULTURAL SOCIETY—SCHEDULE

	Nominal.			Cost.		
	£	s.	d.	£	s.	d.
<b>DEPRECIATION AND RENEWALS FUND, VINCENT SQUARE—</b>						
Conversion Loan, 3½%, 1961 . . . . .	13	12	11	11	5	10
Funding Loan, 3%, 1959-1969 . . . . .	2,407	10	9	2,384	16	8
Hertfordshire County Council, 3% Red. Stock, 1948-1953 . . . . .	1,107	7	0	1,076	9	8
Cornwall County Council, 3% Red. Stock, 1953-1963 . . . . .	1,107	7	0	1,056	8	8
Middlesex County Council, 3% Red. Stock, 1948-1953 . . . . .	830	10	3	799	6	3
Metropolitan Water Board, 3% B Stock, 1934-2003 . . . . .	2,110	11	5	1,979	9	7
Conversion Loan, 2½%, 1944-1949 . . . . .	2,768	7	5	2,580	16	11
Plymouth Corporation, 2½% Red. Stock, 1918-1958 . . . . .	225	9	4	111	6	5
	<u>10,570</u>	<u>16</u>	<u>1</u>	<u>10,000</u>	<u>0</u>	<u>0</u>
<b>OLD AND NEW HALLS SINKING FUND—</b>						
Funding Loan, 3%, 1959-1969 . . . . .	3,539	15	6	3,577	5	9
Hertfordshire County Council, 3% Red. Stock, 1948-1953 . . . . .	632	8	5	614	15	11
Cornwall County Council, 3% Red. Stock, 1953-1963 . . . . .	632	8	5	603	6	10
Middlesex County Council, 3% Red. Stock, 1948-1953 . . . . .	474	6	4	456	10	0
Metropolitan Water Board, 3% B Stock, 1934-2003 . . . . .	2,444	15	4	2,292	18	5
Conversion Loan, 2½%, 1944-1949 . . . . .	6,208	3	7	6,245	19	2
Metropolitan Water Board, 3% E Stock, 1953-1973 . . . . .	20	10	6	19	15	8
Funding Loan, 2½%, 1956-1961 . . . . .	438	14	8	423	7	6
	<u>14,391</u>	<u>2</u>	<u>9</u>	<u>14,233</u>	<u>19</u>	<u>3</u>
<b>WEATHER INSURANCE FUND—</b>						
War Loan, 3½%, 1952 . . . . .	3,032	15	11	3,000	0	0
<b>SUPPLEMENTARY PENSION FUND—</b>						
Conversion Loan, 3½%, 1961 . . . . .	2,964	12	2	2,647	4	6
<b>DEPRECIATION OF INVESTMENTS FUND—</b>						
Funding Loan, 3%, 1959-1969 . . . . .	1,848	19	5	1,831	10	10
Conversion Loan, 3½%, 1961 . . . . .	33	19	3	34	2	8
Metropolitan Water Board, 3% B Stock, 1934-2003 . . . . .	104	19	2	98	8	10
	<u>1,987</u>	<u>17</u>	<u>10</u>	<u>1,964</u>	<u>2</u>	<u>4</u>
<b>GENERAL INVESTMENTS—</b>						
Funding Loan, 3%, 1959-1969 . . . . .	12,450	19	10	12,711	2	8
Hertfordshire County Council, 3% Red. Stock, 1948-1953 . . . . .	712	0	7	692	3	8
Cornwall County Council, 3% Red. Stock, 1953-1963 . . . . .	712	0	7	679	5	9
Middlesex County Council, 3% Red. Stock, 1948-1953 . . . . .	534	0	5	513	19	2
Metropolitan Water Board, 3% B Stock, 1934-2003 . . . . .	1,424	11	10	1,336	2	1
Conversion Loan, 2½%, 1944-1949 . . . . .	1,780	1	4	1,639	9	9
Funding Loan, 2½%, 1956-1961 . . . . .	5	13	9	5	8	9
	<u>17,619</u>	<u>8</u>	<u>4</u>	<u>17,597</u>	<u>11</u>	<u>10</u>

# OF INVESTMENTS, 31st DECEMBER, 1935.

	Nominal.			Cost.		
	£	s.	d.	£	s.	d.
WISLEY ENDOWMENT TRUST FUND—						
Conversion Loan, 3½%, 1961 . . . .	2,588	17	1	2,105	3	6
Funding Loan, 3%, 1959-1969 . . . .	4,002	5	9	3,964	11	0
Hertfordshire County Council, 3% Red. Stock, 1948-1953 . . . . .	1,041	4	3	1,012	3	11
Cornwall County Council, 3% Red. Stock, 1953-1963 . . . . .	1,041	4	3	993	6	9
Middlesex County Council, 3% Red. Stock, 1948-1953 . . . . .	780	18	2	751	11	5
Metropolitan Water Board, 3% B Stock, 1934-2003 . . . . .	2,083	4	1	1,953	16	4
Conversion Loan, 2½%, 1944-1949 . . . .	2,824	2	3	2,654	14	1
War Loan, 3½%, 1952 . . . . .	1,647	5	1	1,580	14	7
London County, 5% Cons. Stock, 1940-1960 .	600	0	0	505	12	0
Metropolitan Cons. 2½% Stock, 1919-1949 .	970	0	0	499	12	0
Plymouth Corporation, 6% Red. Stock, 1940- 1950 . . . . .	30	9	4	29	6	4
Plymouth Corporation, 2½% Red. Stock, 1918- 1958 . . . . .	400	0	0	197	1	0
Bristol Corporation, 2½% Red. Deb. Stock .	600	0	0	278	18	6
Canadian Pacific, 4% Perp. Cons. Deb. Stock.	4,632	0	0	3,890	17	6
Buenos Ayres Gt. Southern Railway, 5% Non- Cum. Pref. Stock . . . . .	2,500	0	0	2,825	0	0
Funding Loan, 2½%, 1956-1961 . . . .	259	14	5	250	12	8
	26,001	4	8	23,493	1	7

## DEPRECIATION AND RENEWALS FUND, WISLEY—

Funding Loan, 3%, 1959-1969 . . . . .	2,185	17	6	2,180	8	6
Hertfordshire County Council, 3% Red. Stock, 1948-1953 . . . . .	506	19	9	492	17	2
Cornwall County Council, 3% Red. Stock, 1953-1963 . . . . .	506	19	9	483	13	7
Middlesex County Council, 3% Red. Stock, 1948-1953 . . . . .	380	4	10	365	19	2
Metropolitan Water Board, 3% B Stock, 1934-2003 . . . . .	1,287	1	1	1,207	2	3
Conversion Loan, 2½%, 1944-1949 . . . .	1,267	9	5	1,181	12	4
London County, 5% Cons. Stock, 1940-1960 .	785	5	3	661	13	6
Metropolitan Consolidated 2½% Stock, 1919- 1949 . . . . .	1,287	9	2	662	19	3
Plymouth Corporation, 2½% Red. Stock, 1918- 1958 . . . . .	288	8	10	142	1	0
Plymouth Corporation, 6% Red. Stock, 1940- 1950 . . . . .	159	18	4	151	12	4
Bristol Corporation, 2½% Red. Deb. Stock .	795	14	6	369	15	3
Funding Loan, 2½%, 1956-1961 . . . .	259	1	4	250	0	0
	9,710	9	9	8,149	14	4

## ALFRED DAVIS TRUST FUND—

London County, 5% Cons. Stock, 1940-1960 .	375	0	0	316	0	0
Metropolitan Consolidated, 2½% Stock, 1919- 1949 . . . . .	610	0	0	314	4	0
Plymouth Corporation, 2½% Red. Stock, 1918-1958 . . . . .	200	0	0	98	10	6
Plymouth Corporation, 6% Red. Stock, 1940- 1950 . . . . .	32	7	4	31	2	3
Bristol Corporation, 2½% Red. Deb. Stock .	400	0	0	186	3	6
	1,617	7	4	946	0	3

# SCHEDULE OF INVESTMENTS, 31st DECEMBER, 1935.

	Nominal.			Cost.		
	£	s.	d.	£	s.	d.
<b>WILLIAMS MEMORIAL FUND—</b>						
East Indian Railway £7 Annuity, Class "B," 1953 . . . . .	168	0	0	168	0	0
Conversion Loan, 3½%, 1961 . . . . .	55	1	9	41	9	4
Metropolitan Water Board, 3% B Stock, 1934-2003 . . . . .	39	6	5	36	17	6
	<u>262</u>	<u>8</u>	<u>2</u>	<u>246</u>	<u>6</u>	<u>10</u>
<b>MASTERS MEMORIAL FUND—</b>						
L.M.S. Railway, 4% Preference Stock . . . . .	250	0	0	290	13	6
" " 4% Guaranteed Stock . . . . .	250	0	0	252	3	6
	<u>500</u>	<u>0</u>	<u>0</u>	<u>542</u>	<u>17</u>	<u>0</u>
<b>NICHOLSON MEMORIAL FUND—</b>						
Metropolitan Water Board, 3% B Stock, 1934-2003 . . . . .	209	0	11	196	1	5
<b>SCHRÖDER PENSION FUND—</b>						
Great Western Railway, 4% Deb. Stock . . . . .	500	0	0	557	14	6
<b>LINDLEY LIBRARY TRUST FUND—</b>						
L.M.S. Railway, 4% Pref. Stock . . . . .	1,137	0	0	1,458	15	7
Funding Loan, 3% 1959-1969 . . . . .	47	8	4	50	0	0
	<u>1,184</u>	<u>8</u>	<u>4</u>	<u>1,508</u>	<u>15</u>	<u>7</u>
<b>SIR JAMES KNOTT TRUST FUND—</b>						
Agricultural Mortgage Corporation, Ltd., 4½% Deb. Stock . . . . .	558	19	5	600	0	0
<b>VEITCH MEMORIAL TRUST FUND—</b>						
Government of Australia 3½% Reg. Stock, 1954-1959 . . . . .	1,354	0	1	1,354	0	1
War Loan, 3½%, 1952 . . . . .	319	19	0	319	19	0
Conversion Loan, 3½%, 1961 . . . . .	3	11	9	3	12	1
Funding Loan, 3%, 1959-1969 . . . . .	38	10	5	40	12	5
	<u>1,716</u>	<u>1</u>	<u>3</u>	<u>1,718</u>	<u>3</u>	<u>7</u>
<b>MOORE MEDAL TRUST FUND—</b>						
Agricultural Mortgage Corporation, Ltd., 4½% Deb. Stock . . . . .	173	19	8	190	10	6
<b>SEWELL MEDAL TRUST FUND—</b>						
Conversion Loan, 5%, 1944-1964 . . . . .	401	5	7	400	0	0
Metropolitan Water Board, 3% B Stock, 1934-2003 . . . . .	135	19	2	127	10	3
	<u>537</u>	<u>4</u>	<u>9</u>	<u>527</u>	<u>10</u>	<u>3</u>
<b>MRS. SHERMAN HOYT PRIZE FUND—</b>						
Conversion Loan, 5%, 1944-1964 . . . . .	208	1	2	207	7	10
<b>LORD RIDDELL TROPHY FUND—</b>						
Conversion Loan, 3½%, 1961 . . . . .	218	4	9	175	0	0
<b>DEDICATIONS VOLUME FUND (BOTANICAL MAGAZINE)—</b>						
Conversion Loan, 3½%, 1961 . . . . .	113	1	5	112	0	0
Metropolitan Water Board, 3% B Stock, 1934-2003 . . . . .	29	0	7	27	4	6
Funding Loan, 3%, 1959-1969 . . . . .	19	12	4	20	13	9
	<u>161</u>	<u>14</u>	<u>4</u>	<u>159</u>	<u>18</u>	<u>3</u>
<b>THE COLMAN FUND—</b>						
War Loan, 3½%, 1952 . . . . .	937	15	6	1,000	0	0
Funding Loan, 2½%, 1956-1961 . . . . .	36	15	10	35	11	1
	<u>974</u>	<u>11</u>	<u>4</u>	<u>1,035</u>	<u>11</u>	<u>1</u>

## GENERAL MEETINGS.

JULY 31, 1935.

**DEPUTATION TO LEICESTER.**—A deputation consisting of Mr. THOMAS HAY, M.V.O., V.M.H., and Mr. G. W. LEAK, V.M.H., visited Leicester for the Show of the Leicester and Leicestershire Horticultural Society, and made the following awards.

*Silver-gilt Banksian Medal.*

To J. H. Goddard, Esq., Rothley, Leicester, for an exhibit of Begonias.

*Silver Flora Medal.*

To Messrs. Kelway, Langport, for an exhibit of Gladioli.

To Messrs. The Suffolk Seed Stores, Woodbridge, for an exhibit of herbaceous plants.

*Silver Banksian Medal.*

To Messrs. Wm. Wood, Taplow, for an exhibit of herbaceous plants.

*Silver Hogg Medal.*

To Lady Kathleen Curzon Herrick, Woodhouse, Loughborough (gr. Mr. J. McBean), for an exhibit of fruit.

*Flora Medal.*

To Messrs. Willik Brothers, Rearby, Leicester, for an exhibit of Roses.

To Messrs. The En-Tout-Cas Co., Syston, Leicester, for an exhibit of shrubs.

To Messrs. Harrison, Leicester, for an exhibit of annuals.

*Banksian Medal.*

To Messrs. D. Stewart, Ferndown, nr. Wimborne, for an exhibit of herbaceous plants.

To Messrs. Jones Brothers, Bromborough, Cheshire, for an exhibit of herbaceous plants.

*Knightian Medal.*

To Colonel the Rt. Hon. John Gretton, C.B.E., M.P., Melton Mowbray (gr. Mr. A. Graham), for an exhibit of vegetables.

NOVEMBER 5, 1935.

*Gold Grenfell Medal.*

To Mr. Frank Galsworthy, Green Lane Farm, Chertsey, for an exhibit of paintings of flowers.

*Silver-gilt Grenfell Medal.*

To Lieut.-Commdr. J. P. W. Furse, R.N., 10 Bramley Flats, Alverstoke, Hants, for an exhibit of paintings of Fritillaries.

*Grenfell Medal.*

Mr. H. A. Thomerson, St. Margarets, Church Hill, Loughton, for an exhibit of drawings of plants and shrubs.

The First Masters Memorial Lecture was given by Sir William Wright Smith, M.A., F.L.S., V.M.H., on "Problems connected with the Classification of Plants" (p. 77).

Chairman, Sir ARTHUR HILL, K.C.M.G., Sc.D., F.R.S., V.M.H.

**SCIENTIFIC COMMITTEE.**—Mr. A. D. COTTON, F.L.S., in the Chair, and six other members present.

*Fungus on Plumbago capensis.*—Mr. Hales showed specimens of *Plumbago capensis* from the Physic Garden at Chelsea with the fungus *Botrysporium pulchrum* growing upon them. This fungus is always to be found upon this particular plant at Chelsea but does little damage to it.

*Peziza aurantia.*—A mass of the large and striking orange cups of the fungus *Peziza aurantia* was shown from a garden at Esher. The fungus grows on soil and does no damage.

*Proliferous pear.*—A small pear from a summer flower in which the sepals had become foliose, and which was proliferous with another tiny pear projecting from the centre, was shown by Mr. Chittenden.

*Pine cones damaged*.—Mr. Percy Bunyard showed cones of the Scots Pine attacked by the Crossbill (which is locally abundant at the present time) and by the Great Spotted Woodpecker which was apparently in search of seeds.

*Leek bulbiferous*.—Mr. Cotton showed a photograph of the common leek with a lateral bulb at the base of the normal growth, the bulb being over an inch in diameter. The Committee has previously had inflorescences of the leek containing bulbs before it, but no member had seen such a bulb at the base of the plant. See p. xxx.

**FRUIT AND VEGETABLE COMMITTEE**.—Mr. E. A. BUNYARD, F.L.S., in the Chair, and nine other members present.

**Exhibits.**

East Malling Research Station, Kent: exhibit of Walnuts; propagation, varieties and storing, etc.

Mr. W. H. E. Mitchell, Ballybrophy, Ireland: seedling Apple.

**FLORAL COMMITTEE A**.—Mr. G. W. LEAK, V.M.H., in the Chair, and seventeen other members present.

**Awards Recommended :—**

*Gold Medal.*

To J. Pierpoint Morgan, Esq. (gr. F. A. Steward), Watford, for Begonias and Gesneras.

*Silver Flora Medal.*

To Messrs. K. Luxford, Sawbridgeworth, for Chrysanthemums.

*Silver Banksian Medal.*

To Messrs. Barr, London, for Nerines.

To Messrs. Engelmann, Saffron Walden, for Carnations.

*Flora Medal.*

To Swanley Horticultural College, Swanley, for Chrysanthemums.

*Banksian Medal.*

To Messrs. Allwood, Haywards Heath, for Carnations.

To Mr. Amos Perry, Enfield, for Nerines and Physalis.

*Award of Merit.*

To Chrysanthemum 'Caroline' for cutting and market (votes 15 for, 2 against), from Messrs. Luxford, Sawbridgeworth. See p. 91.

To Chrysanthemum 'Carrow Glory' for cutting and market (votes 11 for, 4 against), from Messrs. Luxford, Sawbridgeworth. See p. 91.

To Chrysanthemum 'Mason's Orange' for cutting and market (votes unanimous), from Mr. T. Stevenson, Hillingdon. See p. 92.

To Chrysanthemum 'Southern Beauty' for cutting and market (votes unanimous), from Messrs. Burtenshaw, Worthing. See p. 92.

**Other Exhibits.**

Messrs. Greenyer, Worthing: Chrysanthemums.

J. F. Hanbury, Esq., East Grinstead: Chrysanthemums.

Lt.-Col. L. C. R. Messel, O.B.E., Handcross: Chrysanthemum 'Lady Anne.'

Mr. S. D. Overall, Ingatstone: Chrysanthemum 'Miss Dorothy Hilder.'

Mr. T. Stevenson, Hillingdon: Chrysanthemum 'Evening Star.'

Messrs. Sutton, Reading: Chrysanthemum 'Ruby Glow.'

Mr. A. L. Watson, Lenzie: Chrysanthemum 'D. Macintosh.'

Lady Yule, Bricket Wood: Chrysanthemum 'Hanstead Beauty.'

**FLORAL COMMITTEE B**.—Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and seventeen other members present.

**Awards Recommended :—**

*Flora Medal.*

To Messrs. Hillier, Winchester, for ornamental foliated shrubs.

To Hocker Edge Gardens, Cranbrook, for bulbous plants.

To Messrs. Russell, Richmond, for Vitis, Clematis and other shrubs.

*Banksian Medal.*

To Mr. L. Lawrence, Taplow, for succulents.

To Messrs. Wm. Wood, Taplow, for ornamental foliated shrubs.

*First-class Certificate.*

To Cotoneaster 'Cornubia' as a hardy fruiting shrub (votes 12 for), from Lionel de Rothschild, Esq., Exbury, Southampton. See p. 92.

**Other Exhibits.**

Messrs. Clark, Dover: shrubs.

Mr. J. Hammond, Ashbourne: fruiting specimen of *Stephanotis floribunda*.

Miss Hopkins, Coulsdon: hardy plants.

Collingwood Ingram, Esq., Benenden: *Pyrus baccata mandshurica*.

Viscountess St. Cyres, Lymington: *Corokia buddleioides*.

Mrs. I. A. Tracey, Wimborne: *Cyclamen cyprinum*.

**ORCHID COMMITTEE.**—Sir JEREMIAH COLMAN, Bt., in the Chair, and thirteen other members present.

**Awards Recommended:—***Silver Banksian Medal.*

To Ernest R. Ashton, Esq., Broadlands, Tunbridge Wells, for a group.

*Award of Merit.*

To *Cypripedium* × 'Balaclava' ('Gwen Hannen' × 'Warrior') (votes 10 for), from Lionel de Rothschild, Esq., Exbury. See p. 92.

To *Laeliocattleya* × 'Colorado' (*C. Dowiana aurea* × *L.-c.* × 'Yukon') (votes 10 for, 2 against), from Lionel de Rothschild, Esq. See p. 93.

To *Calanthe* × 'Wylam' var. 'Rose's Bower' ('Angela' × 'Ruby' var. *Cooksoniae*) (votes 9 for, 4 against), from Clive Cookson, Esq., Nether Warden, Hexham. See p. 91.

*Cultural Commendation.*

To Mr. B. P. Dunster, Orchid grower to Ernest R. Ashton, Esq., Broadlands, Tunbridge Wells, for a well-cultivated plant of *Vanda Kimballiana* bearing five many-flowered spikes.

**Other Exhibits.**

Messrs. Armstrong & Brown, Tunbridge Wells: a group.

Messrs. Sanders, St. Albans: a group.

Messrs. McBean, Cooksbridge: a group.

NOVEMBER 19, 1935.

## THE BRITISH CARNATION SOCIETY'S SHOW.

**JOINT PERPETUAL FLOWERING CARNATION COMMITTEE.**—Mr. J. M. BRIDGEFORD in the Chair, and ten other members present.

**Awards Recommended:—***Award of Merit.*

To Carnation 'Silver Jubilee' (votes unanimous), from Mr. C. H. Cook, The Royal Gardens, Windsor. See p. 91.

**Other Exhibits.**

Ashington Nurseries, Sussex: Carnations 'Ashington Yellow,' 'Ashington Pink' and 'Nina Brenner.'

W. E. Tucker, Esq., Boscombe: Carnation 'Bournemouth Echo.'

N. A. Heywood, Esq., Woodbridge, Suffolk: Carnation 'Monica.'

Messrs. Allwood Bros., Haywards Heath: Carnations 'Marchioness of Headfort,' 'Wivelsfield Salmon,' 'Virginia' and 'Duchess of Gloucester.'

Messrs. Stuart Low, Enfield: Carnation 'Joan Marie.'

NOVEMBER 26, 1935.

*Silver-gilt Grenfell Medal.*

To Lieut.-Commr. J. P. W. Furse, R.N., 10 Bramley Flats, Alverstoke, Hants, for an exhibit of water-colour paintings of species of Tulipa.

*Silver Grenfell Medal.*

To Mr. A. G. Stubbs, 71 Berriedale Avenue, Hove, Sussex, for an exhibit of water-colour drawings of flowers, Fungi, Lichens, etc.

The Second Masters Memorial Lecture was given by Sir William Wright Smith, M.A., F.L.S., V.M.H., on "Problems connected with the Classification of Plants."

Chairman, Sir DANIEL HALL, K.C.B., LL.D., Sc.D., F.R.S.

**SCIENTIFIC COMMITTEE.**—Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and six other members present.

*Bulbous Leeks.*—Mr. Chittenden drew attention to a report of an exhibition of bulbous leeks at Chiswick recorded in the Society's JOURNAL, Vol. 12. The size of the bulbs was not mentioned.

*Banana from Gibraltar.*—A ripe banana was shown from a garden in Gibraltar where fruit ripens annually. The seed was well developed and the plant is apparently *Musa Basjoo*.

*Prunus serrulata variegated.*—Dr. Denham sent from his garden in Oxford shoots of a plant of *Prunus serrulata* (imported from Japan) bearing leaves some of which were half yellow, half green, with, in places, lighter green patches. Dr. Denham was asked to report on the behaviour of the plant next year.

*Physalis with dialysed calyx, etc.*—Mr. Bowles showed on behalf of Mr. Perry a curious variety of *Physalis Alkekengi* in which the calyx was divided into narrow segments, the axis continued and sometimes branched, and the segments repeated (but separated by internodes). The axis and segments were bright red, as is normal for the ripe calyx of this species. The name *monstrosa* is proposed for the variety. The specimen was deposited in the Kew Herbarium.

**FRUIT AND VEGETABLE COMMITTEE.**—Mr. E. A. BUNYARD, F.L.S., in the Chair, and six other members present.

Business consisted of identification of fruits.

**FLORAL COMMITTEE A.**—Mr. G. W. LEAK, V.M.H., in the Chair, and fifteen other members present.

**Awards Recommended :—**

*Gold Medal.*

To Messrs. Sutton, Reading, for Cyclamen.

*Silver-gilt Banksian Medal.*

To Messrs. Luxford, Sawbridgeworth, for Chrysanthemums.

*Silver Flora Medal.*

To Mr. A. G. Vinten, Balcombe, for Chrysanthemums.

To Mr. H. Woolman, Birmingham, for Chrysanthemums.

*Silver Banksian Medal.*

To Messrs. Engelmann, Saffron Walden, for Carnations.

*Banksian Medal.*

To Messrs. Allwood, Haywards Heath, for Carnations.

*Award of Merit.*

To Chrysanthemum 'T. Tyson' for cutting and market (votes unanimous), from Mr. T. Tyson, Crawley. See p. 92.

**Other Exhibits.**

Mr. P. Cardwell, Batley : Chrysanthemum 'Mrs. P. Cardwell.'

Messrs. Clark, Dover : Scabious and shrubs.

Mr. F. Everitt, Enfield Lock : Primulas and Cyclamen.

Messrs. Luxford, Sawbridgeworth : Chrysanthemum 'Jennifer.'

Messrs. Paragreen, Thurlaston : Chrysanthemum 'Edwin Paragreen.'

Mr. T. Tyson, Crawley : Chrysanthemum 'Avondale Pink.'

**FLORAL COMMITTEE B.**—Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and eighteen other members present.

**Awards Recommended :—**

*Silver Banksian Medal.*

To Messrs. Russell, Richmond, for greenhouse plants and shrubs.

*Banksian Medal.*

To Mr. W. A. Constable, Southborough, for *Lilium ochraceum*.

To Hocker Edge Gardens, Cranbrook, for Gentians and bulbous plants.

To Mr. L. Lawrence, Taplow, for succulents.

To Messrs. Stewart, Ferndown, for berried shrubs.

*Award of Merit.*

To *Canarina abyssinica* as a flowering plant for the cool greenhouse (votes unanimous), from Messrs. Russell, Richmond. See p. 91.



To *Euonymus radicans* var. *Carrierei* as a hardy, ornamental-fruited shrub (votes unanimous), from the Curator, University Botanic Garden, Cambridge. See p. 92.

To *Salvia leucantha* as a flowering plant for the cool greenhouse (votes 14 for), from T. Hay, Esq., Hyde Park, W. 2. See p. 93.

*Preliminary Commendation.*

To *Camellia Sasangua* 'Azuma Nishiki' as a hardy flowering shrub (votes unanimous), from Lionel de Rothschild, Esq., Exbury.

**Other Exhibits.**

Mr. Stuart Boothman, Maidenhead : dwarf Conifers in pots.

Messrs. Burkwood & Skipwith, Kingston-on-Thames : *Ceanothus* 'A. T. Johnson.'

Viscountess Byng of Vimy, Thorpe-le-Soken : *Cotoneaster lactea*, fruit of *Araujia sericofera*.

W. Balfour Gourlay, Esq., Cambridge : *Iris Histrio* var. *aintabensis*.

Miss Hopkins, Coulsdon : Gentians and other hardy plants.

**ORCHID COMMITTEE.**—Sir JEREMIAH COLMAN, Bart., in the Chair, and fifteen other members present.

**Awards Recommended :—**

*Award of Merit.*

To *Pleurothallis longissima* (votes 12 for, 2 against), from Mrs. Craven Moore, Duckyls, East Grinstead. See p. 93.

To *Brassocattleya* × 'Mayfair' var. 'Celia Neilson' (*B.-c.* × 'Mrs. Robert, Paterson' × *C.* × 'Heatherwood') (votes 10 for, 3 against), from N. Prinsep, Esq., The Boxes, Pevensey Bay. See p. 91.

*Cultural Commendation.*

To Mr. Wm. Gilden, Orchid grower to Mrs. Craven Moore, Duckyls, East Grinstead, for *Pleurothallis longissima*, with 41 many-flowered spikes.

**Other Exhibits.**

Sir Jeremiah Colman, Bart., Gatton Park, Surrey : a group.

Messrs. Charlesworth, Haywards Heath : a group.

Messrs. Armstrong & Brown, Tunbridge Wells : a group.

Messrs. McBean, Cooksbridge : a group.

Messrs. Stuart Low, Jarvis Brook : a group.

Messrs. H. G. Alexander, Tetbury : a group.

DECEMBER 10, 1935.

*Silver-gilt Grenfell Medal.*

To Lieut.-Commander J. P. W. Furse, R.N., Alverstoke, for an exhibit of water-colour paintings of Tulip species and forms.

To Mrs. Norah M. Bower, for an exhibit of paintings of the flora of Victoria.

*Grenfell Medal.*

To Miss Dora Ratman, Balham, for an exhibit of flower paintings.

To Mr. Arthur G. Stubbs, Hove, for an exhibit of paintings and drawings of flowers, fungi, etc.

**SCIENTIFIC COMMITTEE.**—Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and six other members present.

*Ophrys atlantica*.—This terrestrial species from Morocco, now for the first time shown before the Society and referred from Floral Committee B, was recommended for a Botanical Certificate. It was sent by Lord Aberconway.

*Allium fistulosum giganteum*.—Mr. E. A. Bunyard showed a large form of *Allium fistulosum* (Mr. Hales showing the ordinary form for comparison) in which the growth was much taller than in the "potato onion" and which had no bulbs in the inflorescence. Mr. Bunyard said it made an excellent vegetable, multiplying freely by outgrowths from the base.

*Oxalis hirta*.—Professor Barnard sent two forms of *Oxalis hirta*, one with pale, the other with bright cherry-red flowers, probably identical with the variety figured in Botanical Register under the name of var. *fulgida*.

*Massonia*.—He also sent a *Massonia* just beginning to flower, with growth similar to that of *M. pustulata* and probably identical with that species.

*Richea Milliganii*.—This plant, referred to the Committee from Floral Committee B, introduced from Tasmania by Mr. Comber's seed and shown by Colonel Messel, was recommended for a Botanical Certificate.

**FRUIT AND VEGETABLE COMMITTEE.**—Mr. E. A. BUNYARD, F.L.S., in the Chair, and eight other members present.

**Exhibits.**

Messrs. Laxton, Bedford : collection of Apples and Pears.

Mr. E. A. Bunyard, Allington : Apple 'Pine-apple Russet.'

**FLORAL COMMITTEE A.**—Mr. G. W. LEAK, V.M.H., in the Chair, and sixteen other members present.

**Awards Recommended :—**

*Silver Banksian Medal.*

To Messrs. Engelmänn, Saffron Walden, for Carnations, *Euphorbia fulgens*.

To Messrs. Low, Enfield, for Carnations and other greenhouse plants.

To Messrs. Luxford, Sawbridgeworth, for Chrysanthemums.

To Mr. A. G. Vinten, Balcombe, for Chrysanthemums.

*Flora Medal.*

To Messrs. Allwood, Haywards Heath, for Carnations.

*Banksian Medal.*

To Messrs. Greenyer, Worthing, for Chrysanthemums.

To Messrs. Toogood, Southampton, for Cyclamen.

*Award of Merit.*

To Chrysanthemum 'Distinction' for cutting and market (votes unanimous), from Messrs. Luxford, Sawbridgeworth. See p. 91.

To Chrysanthemum 'George Prickett' for cutting and market (votes unanimous), from Messrs. Prickett, Enfield Highway. See p. 91.

To Chrysanthemum 'Market Gold' for cutting and market (votes 11 for), from Messrs. Luxford, Sawbridgeworth. See p. 91.

To Chrysanthemum 'Thanksgiving Gem' for cutting (votes 6 for, 3 against), from Messrs. Luxford, Sawbridgeworth. See p. 92.

To Chrysanthemum 'White Distinction' for cutting and market (votes unanimous), from Messrs. Luxford, Sawbridgeworth. See p. 92.

**Other Exhibits.**

Mr. G. W. Briggs, Sutton-in-Ashfield : Chrysanthemum.

Mr. F. Everitt, Enfield Lock : Cyclamen.

Mr. G. Humphries, Kingston Langley : Chrysanthemum 'Jubilee Favourite.'

**FLORAL COMMITTEE B.**—Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and nineteen other members present.

**Awards Recommended :—**

*Flora Medal.*

To Messrs. Russell, Richmond, for stove plants and shrubs.

To W. G. Theobald, Esq., Steyning, for Cotyledons.

*First-class Certificate.*

To *Gentiana ornata* as a hardy flowering plant for the rock garden (votes 11 for), from Lord Aberconway, Bodnant. See p. 92.

To *Luculia Pinceana* as a flowering shrub for the cool greenhouse (votes unanimous), from Lionel de Rothschild, Esq., Exbury. See p. 93.

*Preliminary Commendation.*

To *Gladiolus maculatus* (votes unanimous), from T. T. Barnard, Esq., Wareham.

**Other Exhibits.**

Lord Aberconway, Bodnant : *Viburnum fragrans*, *Ophrys atlantica*.

T. T. Barnard, Esq., Wareham : *Oxalis hirta* vars., *Massonia pustulata*, *Syringodea filifolia*.

University Botanic Garden, Cambridge : *Hakea suaveolens*.

Messrs. Clark, Dover : shrubs.

Mrs. Vera Higgins, Croydon : *Gibbaeum dispar*.

Miss Hopkins, Coulsdon : hardy plants.

Lt.-Col. L. C. R. Messel, O.B.E., Handcross : *Richea Milliganii*.

Messrs. Russell, Richmond : Rhododendron 'Lord Wolseley Improved.'

The Henry Williams Co., Cape Town : *Ornithogalum lacteum*.

Mr. R. Colpoys Wood, West Drayton : shrubs.

# EXTRACTS FROM THE PROCEEDINGS

## OF THE

### ROYAL HORTICULTURAL SOCIETY.

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#### NOTICES TO FELLOWS.

##### SUBSCRIPTIONS.

Subscriptions became due on January 1. Fellows who have not yet paid their subscriptions are reminded that on March 16, 1936, the last day on which applications for surplus plants and seeds can be received, one of the privileges of Fellowship ceases.

If Fellows wish to relieve themselves of any further trouble in the payment of their subscriptions, they may either compound by payment of a lump sum for life Fellowship, or obtain from the Secretary a banker's order, instructing their bankers to pay their subscription on January 1 each year.

##### PLANT DISTRIBUTION.

Lists of seeds and plants available for distribution in 1936, together with the form of application, were distributed with the January JOURNAL. The completed application forms *must* be received at Wisley, with the appropriate packing charge, *on or before March 16, 1936*, except from Fellows resident abroad. Should these papers have been mislaid the Secretary will issue duplicates on application.

##### COMMITTEES.

The attention of Fellows is directed to the January number of the JOURNAL wherein will be found a list of the Committees and the times at which they meet.

##### SMALL EXHIBITS FROM FELLOWS.

With the coming of Spring many Fellows and Associates will probably have in their gardens or glass-houses plants of particular interest. They are invited to exhibit such plants, flowers, fruits or vegetables, which may be staged on the small exhibits table at any fortnightly meeting, although space has not been applied for beforehand. The exhibits should not consist of more than 3 pots, vases or dishes. A clerk of the Society will be at the small exhibits table at noon on the first morning of each meeting, and he will be prepared to help stage the exhibits and to provide the necessary cards. Exhibits staged under these conditions may be considered for the award of certificates of horticultural commendation.

##### ABANDONMENT OF THE FORTNIGHTLY SHOW ON JANUARY 28.

Owing to the sad death of King George V (see further reference, p. 101) and to the fact that January 28 coincided with the date of his late Majesty's funeral, the fortnightly show was abandoned. This necessitated the cancellation of the lecture on "The Care of Old Trees" by Mr. A. D. C. LE SUEUR. As the calendar of lectures cannot be altered, and rather than defer this lecture until next year, it will be printed *in extenso* in this JOURNAL in the issue for April. It is very gratifying to announce that Mr. LE SUEUR has promised to give a further lecture next year, taking a kindred subject for his title.

##### CALENDAR.

*March 6.*—Closing date for entries for the Chelsea Flower Show.

*March 10, 1 to 7.30 P.M., and March 11, 10 A.M. to 5 P.M.*—Fortnightly Meeting and Show. On this occasion there are likely to be exhibits of Alpine house plants, Orchids, particularly Cymbidiums, Daffodils, and forced flowering shrubs.

At 3.30, on Tuesday afternoon, *March 10*, in the Lecture Room of the New Hall, Captain KINGDON WARD will lecture on his expedition to the Patkoi Mountains, from which he has just returned. He will doubtless have much to say of interest on this region which has been little explored either geographically or horticulturally.

*March 11* and *12*, 2 to 4 P.M. (weather permitting).—Demonstration at Wisley on "Seed Sowing—Indoors and Outdoors." Fellows wishing to attend the Demonstration should inform the Director, R.H.S. Gardens, Wisley, Ripley, Surrey, beforehand, mentioning which day they propose attending.

*March 18* and *19*, 2 to 4 P.M. (weather permitting).—Demonstration at Wisley on "Rose Pruning." As intimated above, it is a convenience if those Fellows proposing to attend the Demonstration would notify the Director of the Gardens.

*March 24*, 1 to 7.30 P.M., and *March 25*, 10 A.M. to 5 P.M.—Fortnightly Meeting and Show. Alpine and greenhouse plants will still be on show, but with the advance of the season spring flowers and flowering shrubs will be more and more in evidence.

On the afternoon of Tuesday, *March 24*, at 3.30, in the Lecture Room of the New Hall, Mr. C. H. RIGG will lecture on "Growing Roses under Glass."

*April 4*, 1 to 7 P.M.—The London Gardens Society's Exhibition of Spring Flowers, in the Old Hall. Fellows' tickets admit free.

*April 6*.—Closing date for entries for the British Floral Art Diploma Examination.

*April 7*, 1 to 7.30 P.M., and *April 8*, 10 A.M. to 5 P.M.—Fortnightly Meeting and Show, in the New Hall: Alpine Gardens Society's Show in the Old Hall.

At 3.30, on Tuesday afternoon, *April 7*, in the Lecture Room of the New Hall, Mr. N. K. GOULD will lecture on "The Newer Primulas."

At 3.30, on Wednesday afternoon, *April 8*, in the Lecture Room of the New Hall, Mr. R. W. WALLACE will lecture before members of the Institute of Landscape Architects on "Water Gardens and Waterside Planting." Fellows of the R.H.S. who are interested in this subject will be welcomed.

*April 8* and *9*, 2 to 4 P.M. (weather permitting).—Demonstrations at Wisley on (1) Spring Spraying of Fruit Trees, and (2) Shrub Pruning. Fellows desiring to attend the Demonstrations should notify the Director of the Gardens beforehand, saying on which day they propose to attend.

*April 8*.—Closing date for entries for the Early Market Produce Show.

*April 11*.—Closing date for entries for the Daffodil Show.

Thursday, *April 16*, 1 to 7.30 P.M., and Friday, *April 17*, 10 A.M. to 5 P.M.—Daffodil Show in the New Hall, and Early Market Produce Show in the Old Hall. There will be a special exhibit from Wisley at the Daffodil Show, showing pests and diseases of Daffodils.

At 3.30 P.M., in the Lecture Room of the New Hall on Thursday, *April 16*, Mr. H. V. TAYLOR will lecture on "Vegetables for Pickling."

*April 21*, 1 to 7.30 P.M., and *April 22*, 10 A.M. to 5 P.M.—Fortnightly Meeting, and an exhibition by the National Auricula and Primula Society in the New Hall. British Carnation Society's Show in the Old Hall.

At the Fortnightly Meeting, *Odontoglossums* will be particularly prominent. This show is the occasion of the competition for the *Odontoglossum* trophy and for the Sewell Medal for Alpines, and anyone interested should apply to the Secretary for particulars.

At 3.30 P.M., in the Lecture Room of the New Hall, on *April 21*, Mr. E. R. CARTER will lecture on "Carnation Growing for the Amateur." The attention of Fellows is particularly drawn to this lecture, as it has been arranged since the tickets were printed and does not appear thereon.

At 4.30 P.M., in the Restaurant of the Old Hall, on *April 21*, the Lily Group will meet to discuss "Fritillaries."

*April 28*, 1 to 7.30 P.M., and *April 29*, 10 A.M. to 5 P.M.—Rhododendron Association's Show in the New Hall.

*April 29* and *30*.—A trial of Garden and Lawn Sprinklers will be held at Wisley.—See special notice, p. xxxvi.

#### *Odontoglossum Competition.*

Through the kindness of the Orchid Trade, a competition, similar to that held for *Cypripediums* on *February 11*, will be held at the Fortnightly Show on *April 21* and *22* for *Odontoglossums*, and a silver trophy will be offered for award to the amateur who exhibits the best 25 plants of *Odontoglossum*, species and/or hybrids. Hybrids with other genera will be admissible, e.g. *Odontioda*, *Odontonia*, etc. Entries must be made on special forms obtainable on application to the Secretary, and should be received at the Society's offices not later than the first post on Wednesday, *April 15*.

## CONFERENCE ON ALPINE PLANTS, 1936.

In co-operation with the Alpine Garden Society, a Conference on Alpine Plants will be held from May 5 to 7. On the first two days there will be a special show of Alpines in the New Hall, which will include both competitive classes for amateurs and non-competitive classes for the trade. A special schedule has been prepared for the show and may be had on application to the Secretary, R.H.S. Offices, Vincent Square, Westminster, S.W. 1.

## CONFERENCE PROGRAMME.

TUESDAY, MAY 5, 1936, AFTERNOON SESSION, 3-5.

*Chairman.*—Lord ABERCONWAY, C.B.E., V.M.H., President of the Royal Horticultural Society, supported by The Viscountess BYNG OF VIMY, President of the Alpine Garden Society.

Introductory Address by the President of the Royal Horticultural Society.

"Rock Gardening of Different Periods in Different Countries," by Lady ROCKLEY, C.B.E., and Mr. CLEVELAND MORGAN (Canada).

"The Rise of Modern Rock Gardening and its Future," by Mr. R. WALLACE.

WEDNESDAY, MAY 6, 1936. MORNING SESSION, 11-1 P.M.

"Utilization of Natural Slopes," by Mr. GEORGE DILLISTONE.

"Utilization of Flat Sites," by Mr. W. E. T. INGWERSEN.

AFTERNOON SESSION, 2.30-5.

"Cultivation of Rock Plants: General," by Mr. R. E. COOPER.

"Difficult Rock Plants," by Mr. C. T. MUSGRAVE.

THURSDAY, MAY 7, 1936. MORNING SESSION, 11-1 P.M.

Rock Gardening in Sunny Countries—

"Rock Gardening in South Africa," by Miss STANFORD (S.A.).

"Rock Gardening in California," by W. HERTRICH (U.S.A.).

AFTERNOON SESSION, 2.30-5.

"The Alpine House," by Mr. P. ROSENHEIM.

"Propagation," by Mr. M. PRICHARD.

The following are among those who have promised to take part in the discussions: Messrs. F. BARKER, J. W. BESANT, AYMON CORREVON, CLARENCE ELLIOTT, R. L. HARROW, S. JACOBS, Dr. JENKIN, Mr. GAVIN JONES, Professor LYTTLE, Messrs. R. H. MACAULAY, RENTON, Major F. C. STERN, Dr. STOKER, Capt. SYMONS-JEUNE, Messrs. J. T. WALL, BEN WELLS, JOHN WOOD.

*Excursions in Connexion with the Conference.*

A comprehensive programme of visits to various gardens is being arranged, and it is hoped that particulars will be published in the April issue of the JOURNAL.

*Sewell Medal Competitions.*

In view of the Alpine Conference which is being held this year, it is to be expected that particular interest will be attached to the competition for the Sewell Medals, and the attention of Fellows and Associates is drawn to the regulations, namely:

Five medals will be offered for award, two at the Fortnightly Show on April 21, two at the Alpine Conference Show on May 5, and one at the Fortnightly Show on June 9. On each date one medal is offered for an amateur's exhibit, and on each of the first two dates one medal is also offered for a horticultural trader's exhibit. At the Alpine Conference Show the amateur's medal is offered as part of the first prize in a Class for 12 pots or pans, and the horticultural trader's medal is offered for 12 pots or pans, under the conditions set forth in the schedule of the show. All exhibits staged in competition for the medals offered for award at the two Fortnightly Shows must consist of six pots or pans not exceeding 12 inches in diameter. Only one subject may be shown in each pot or pan. It

is not necessary that the plants should have been grown in the receptacles in which they are shown and, if desired, plants may be lifted and potted for the purposes of the competition. Not fewer than four plants in each exhibit must be in bloom, and plants which are not in bloom should possess decorative value when shown. The scale of points for judging will be as follows: Suitability, 24 points; Rarity, 18 points; Cultivation, 24 points. Entries must be made on special forms obtainable from the Secretary, by whom the completed forms must be received not later than by the first post on the Wednesday preceding the show.

#### TRIAL OF GARDEN AND LAWN SPRINKLERS.

A trial of all types of sprinkler apparatus suitable for gardens and lawns will be carried out at Wisley on *April* 29, 1936. Makers are invited to send their apparatus to Wisley for this trial. If desired, the senders' own assistants may be present at the trial to explain and work the machines, etc., so that they may appear to the best advantage.

A panel of competent judges will be appointed.

The hour at which the trial will commence will be communicated later, but the apparatus may be sent to Wisley any day before the trial and must be there ready for use by 9 A.M. on *April* 29, 1936.

The necessary entry forms may be obtained on application to the Secretary, R.H.S. Offices, Vincent Square, London, S.W. 1, or to the Director, R.H.S. Gardens, Wisley, Ripley, Surrey.

#### MEMORIAL TO P. D. WILLIAMS.

The Council has decided to open a fund for the purpose of establishing a Memorial to the late P. D. WILLIAMS, V.M.H., of Lanarth, St. Keverne, the well-known horticulturist, breeder of Daffodils and cultivator of Rhododendrons. It is proposed that the Memorial shall take the form of medals to be awarded in connexion with Daffodils and Rhododendrons, the two plants in which he was especially interested and with which his name is so intimately associated.

It is felt that not only all those who knew him personally, but all who appreciate the results of his work, would welcome an opportunity to contribute to the fund. Cheques and postal orders should be made payable to "The P. D. Williams Fund," crossed "Westminster Bank, Victoria Branch," and sent to the Secretary, Royal Horticultural Society, Vincent Square, London, S.W. 1. All contributions will be duly acknowledged.

#### NATIONAL ROSE SOCIETY'S EXHIBITION.

On *April* 24 the National Rose Society is staging a Rose Show in the New Hall. Any Fellows interested in this show can obtain full particulars from Mr. COURTNEY PAGE, Secretary, 117 Victoria Street, S.W. 1. This show was originally arranged for *April* 18, but has since been postponed to *April* 24. Fellows' tickets do not admit.

#### ADDITIONAL LECTURE.

Fellows are asked to make a special note of the fact that a further lecture has been arranged since the printing of the ticket for *April* 21, at 3.30 P.M., in the Lecture Room of the New Hall. This will be given by Mr. E. R. CARTER, on "Carnation Growing for the Amateur."

#### VISIT OF MEMBERS OF THE FRIENDS OF THE NATIONAL LIBRARIES.

The members of Friends of the National Libraries have been invited to visit the Lindley Library on Thursday, *March* 19, 1936. There will be a display of and a talk on horticultural works and drawings selected to show the development of plant illustration from early days, and in addition special facilities will be given for the party to see the full extent of the Lindley Library.

#### EUROPEAN HERBARIUM ON VIEW.

The Horticultural Club, whose club room is at the R.H.S. New Hall, has lately acquired, through the generosity of Mr. J. J. HANBURY, his collection of approximately 30,000 dried specimens of European plants, all of which are catalogued and cased. The Club Committee has kindly suggested that some of our Fellows might be interested to see this collection, and have arranged that it shall be on view on any R.H.S. Show day.

## LECTURE ON THE ROYAL HORTICULTURAL SOCIETY'S SHOWS.

In view of the fact that many of the members of affiliated societies throughout the country are not able to see the staging of the Society's shows, a lecture has been prepared, illustrated with a hundred slides, dealing not only with shows of the present day, but with some of those of bygone years. The lecture and slides may be borrowed, subject to regulations which may be had on application to the Secretary of the R.H.S.

## CHELSEA SHOW 1936.

It is hoped in the April number of the JOURNAL to publish the preliminary programme details for the Chelsea Flower Show.

## PUBLICATIONS.

*Diary*.—There are still a few copies of the R.H.S. Diary for 1936 available, and those desirous of having copies should apply immediately, before it is out of print. Price 2s. in cloth, 5s. in leather, refillable case. Refills 1s. 6d., postage 2d. a copy.

*Daffodil Year Book*.—The Daffodil Year Books for 1933, 1934 and 1935 are available, price 5s. in limp covers, 6s. in stiff covers.

*Lily Year Book*.—The Lily Year Books for 1933, 1934 and 1935 are available, price 5s. in limp covers, 6s. in stiff covers.

*Report of the Apple and Pear Conference*.—"Apples and Pears; Varieties and Cultivation in 1934." Price 7s. 6d.

*Report of Cherry and Soft Fruit Conference*.—"Cherries and Soft Fruits: Varieties and Cultivation in 1935." Price 6s.

## HORTICULTURAL EXAMINATIONS.

*General Examinations in Horticulture, etc.*

There has again been an increase in the numbers entering for all the Society's examinations this year. The examinations are arranged in various places to suit candidates and to take place as follows:

March 18.—General Examination, Seniors and Juniors.

„ 28.—Teachers' Examination in School and Cottage Gardening. Elementary and Advanced (written).

April 25.—National Diploma in Horticulture. Preliminary (written) and Final (written).

Entries for these examinations closed some time ago, but particulars in preparation for 1937 examinations may be had on application to the Secretary.

## BRITISH FLORAL ART DIPLOMA.

The seventh examination for this Diploma will be in two parts, the written on May 11, the practical in the Society's Halls on June 17 and 18, when candidates will be called upon to make various floral designs.

The designs will be open for inspection by Fellows on the afternoon of Thursday, June 18, from 2 to 5 P.M.

## WISLEY GARDENS.

The particulars of admission to the Society's Gardens at Wisley are as follows:

The gates will be open on week-days, including Bank Holidays (but Good Friday and Christmas Day excepted), from 10 A.M. to sunset, or to 7.30 P.M. (whichever is the earlier), on Sundays from the first Sunday in April to the last Sunday in September from 2 to 6 P.M., and on Sundays in October from 2 to 5 P.M.

Fellows of the Society, on showing their tickets, have free personal admission to the Gardens on all occasions when the gates are open.

Friends of Fellows will be admitted on presenting a Fellow's Transferable Ticket, which will admit three persons in all.

The public are admitted on week-days on payment of 2s. 6d. for adults, and 1s. for children under the age of fifteen years; admission on Sundays is reserved for Fellows and their friends.

Children under the age of fifteen years will not be admitted unless accompanied by an adult, who will be held responsible for their conduct while in the Gardens.

## xxxviii PROCEEDINGS OF THE ROYAL HORTICULTURAL SOCIETY.

Members of affiliated Societies and of Horticultural and Scientific Institutions desirous of visiting the Gardens in parties will be afforded free admission on application by the responsible authority to the Director of the Gardens. Applications for such visits should be made at least fourteen days in advance.

All other bodies desirous of visiting the Gardens in parties should apply to the Secretary of the Royal Horticultural Society, stating the number of the party and date of anticipated visit. Such parties will be required to pay 1s. a head, with a minimum of 10s., and must purchase tickets in advance.

No dogs or perambulators will be admitted. Parcels, baskets, etc., must be left at the gate.

### WISLEY IN MARCH.

In all parts of the Garden the month of March brings evidence of the coming of Spring, and visitors will find much of interest to attract their attention.

Colonies of *Iris reticulata* should now be at their best near the greenhouses, while the Alpine Meadow will be carpeted with the dainty *Narcissus Bulbocodium*, and other early flowering species of this genus. Here also as well as in the Rock Garden the Snowflake, *Leucojum vernum*, may be found.

The Alpine House contains much to attract the enthusiast in alpenes, for numerous Saxifrages, both species and hybrids, Primulas, bulbous Irises, Tulips, and the smaller Daffodils and other spring flowering plants, will be at their best. Some of the earliest of the dwarf Rhododendrons should also be flowering now.

Among the earlier flowering shrubs, *Camellia japonica* may be looked for in the Wild Garden, as well as several species of *Pieris* and *Corylopsis*, which should be in full bloom. Here also are stretches of the early flowering *Primula denticulata* in the best coloured forms.

The Heather Garden shows a good display of colour in March when the many forms of *Erica carnea* and *E. mediterranea* with *E. lusitanica* are all flowering freely.

In this section of the garden, Seven Acres, the early flowering shrubs most conspicuous are the Almonds, *Prunus*, Forsythia, Cydonia, Willows and others.

*Cornus Mas*, the Cornelian Cherry, bears its numerous inflorescences of small yellow flowers. Other shrubs to be seen are *Corylopsis spicata* and the vanilla scented *Azara microphylla*.

The greenhouses contain patches of colour produced by the Cape Heaths, *Agapetes buxifolia*, *Prostanthera coccinea*, *Pentapierygium serpens* with long sprays of wax-like pendent flowers of a bright red colour. *Pomaderris elliptica* with its wide terminal clusters of yellow flowers should also be seen. Of the plants trained upon the roof *Abutilon insigne* is this month the most noticeable.

In the Half Hardy House the season is yet too early for any display of bloom, but *Acacia pulchella* and *A. depressa* should be at their best, in company with the rather uncommon *Paeonia arietina cretica* and *Loropetalum chinense*, the tender white-flowered representative from China of the order Hamamelidaceae.

### HALL LETTINGS.

Fellows may be interested to know that, as in the past, the Badminton Tournaments will be held in the Old Hall from March 2 to 7. For full particulars application should be made to Mr. F. W. HICKSON, High Croft, Eversley Park Road, N. 21.

From March 24 to March 26 the London Master Bakers' Exhibition will be held in the Old Hall. The organizer of this exhibition is Mr. A. G. DAVIDSON, Ceres House, 9-13 Pentonville Road, N. 1.

### 51ST EXHIBITION OF THE ROYAL AMATEUR ART SOCIETY.

Fellows' attention is drawn to an interesting loan exhibition of paintings of flowers and gardens from 1700 to 1900 by professional and amateur artists, and also of examples of cut paper flowers and valentines, which is being organized by the Royal Amateur Art Society, to be held at Bathurst House, 12 Belgrave Square, S.W. 1., by kind permission of the Earl and Countess of BATHURST. Our Society is lending a number of water colours of fruits and some of the royal autographs of the Patrons of the Society, illuminated with floral designs. The proceeds of the exhibition will be given to charities.

There will be a private view on Sunday, March 29, and the exhibition will be open from Monday, March 30, to Wednesday, April 1, inclusive.

Fellows interested in this exhibition can obtain further particulars from:

Miss H. Maclean of Ardgour, 2 Buckingham Palace Gardens, London, S.W. 1.



## GENERAL MEETINGS.

DECEMBER 10, 1935.

**ORCHID COMMITTEE.**—Sir JEREMIAH COLMAN, Bt., in the Chair, and sixteen other members present.

**Awards Recommended :—**

*Silver-gilt Banksian Medal.*

To the Hon. Mrs. Tufton, Castle Hill, Englefield Green, Surrey, for a group of *Calanthes*.

*Award of Merit.*

To *Cypripedium* × 'Rosy Dawn' ('Astarte' × 'Gwen Hannen') (votes 15 for, 1 against), from Lord Aberconway, Bodnant, Tal-y-Cafn, N. Wales. See p. 92.

To *Cypripedium* × 'Creona' ('Mme. Albert Fevrier' × 'Psyche') (votes 13 for, 3 against), from Lord Aberconway, Bodnant, Tal-y-Cafn, N. Wales. See p. 92.

*Cultural Commendation.*

To Mr. H. Brown, gardener to the Hon. Mrs. Tufton, Englefield Green, Surrey, for *Cypripedium insigne* var. 'Harefield Hall,' with 20 flowers.

**Other Exhibits.**

Baron Bruno Schröder, Englefield Green : a group.

Messrs. Charlesworth, Haywards Heath : a group.

Messrs. Armstrong & Brown, Tunbridge Wells : a group.

Messrs. H. G. Alexander, Tetbury : a group.

Messrs. McBean, Cooksbridge : a group.

Messrs. Stuart Low, Jarvisbrook : a group.

Messrs. Sanders, St. Albans : a group.

**JOINT PERPETUAL FLOWERING CARNATION COMMITTEE.**—Mr. J. M. BRIDGEFORD in the Chair, and nine other members present.

**Exhibits.**

Carnations 'Marchioness of Headford' and 'Doris Allwood' shown by Messrs. Allwood Bros., Haywards Heath.

JANUARY 14, 1936.

*Silver-gilt Grenfell Medal.*

To Mr. Frank Galsworthy, Green Lane Farm, Chertsey, for an exhibit of paintings of gardens.

*Silver Grenfell Medal.*

To Lt.-Commr. J. P. W. Furse, R.N., 10 Bramley Flats, Alverstoke, for an exhibit of water-colour paintings of *Narcissus* species and hybrids.

**SCIENTIFIC COMMITTEE.**—Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and eight other members present.

**New Members.**—The Chairman welcomed Drs. Barnes and Salisbury, new members of the Committee.

**Influence of soil on growth.**—Dr. Tincker showed shoots of *Rhododendron obtusum amoenum* taken from plants raised from the same bush, but growing in different soils in adjacent beds with the same exposure. The plant from a clayey loam was approximately 20 inches high by 18 inches through, and had thin almost glabrous leaves; that in sandy soil was about 7 inches high and as much through, with small glossy obviously hairy leaves of thick texture.

**Insects visiting *Nymphaea stellata*.**—Mr. Wilson showed a number of hymenoptera and diptera captured in the flowers of *Nymphaea stellata* which they visited in August at Wisley mainly for its pollen. They were drowned in the abundant nectar which is found in cavities on top of the ovary (fig. 26). The list follows with a note of frequency :

**HYMENOPTERA.**—*Halictus minutissimus* Kirby, ♀, 2 per cent. ; *H. morio* Fab., ♀, 2 per cent. ; *H. zonulus* Smith, ♀, 2 per cent. ; *Stelis punctulatis* Kirby, ♂, 2 per cent.

DIPTERA.—*Syrphus balteatus* De Geer, 2 per cent. ; *S. auricollis* Meig. var. *maculicornis* Zett., 8 per cent. ; *S. ribesii* Linn., 4 per cent. ; *Sphaerophoria scripta* Linn., 2 per cent. ; *S. menthastri* Linn., 4 per cent. ; *Syritta pipiens* Linn., 4 per cent. ; *Melanostoma mellinum* Linn., 2 per cent. ;

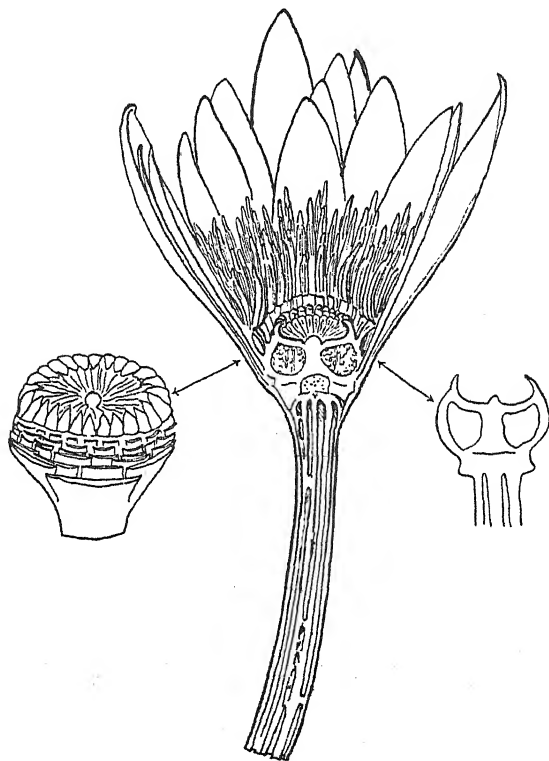


FIG. 26.—SECTION OF FLOWER OF *Nymphaea stellata* SHOWING NECTARIFEROUS CAVITIES IN WHICH VISITING INSECTS DROWN.

*Callicera aenea* F., 2 per cent. ; *Eristalis arbustorum* Linn., ♂, 20 per cent. ; *E. arbustorum* Linn., ♀, 41 per cent.

*Gumming in Prunus incisa*.—Dr. Denham sent examples of shoots of *Prunus incisa* badly affected with gumming. It was referred to Mr. Green to ascertain whether any fungus was present.

*Chimera in Pelargonium*.—Dr. Denham also sent a sport of *Pelargonium* 'Flame,' and the sport has dark-green, non-zonate, somewhat pubescent, slightly bullate foliage and fringed flowers. It throws back to 'Flame' from shoots about 15 inches high. It was referred to the John Innes Horticultural Institution for investigation.

*Damage by spraying*.—He also sent a branch of 'Bramley's Seedling' Apple which had been sprayed with a paraffin-pyrethrum emulsion. The shoot subsequently showed damage by the death of the bark, and what was apparently an attack of the fungus *Nectria ditissima*, causing canker and death of laterals, followed. Other instances of similar damage have come to our notice.

*New Crocus*.—Dr. Balfour Gourlay showed a *Crocus* collected in S.E. Turkey by Mr. E. K. Balls (No. 2158) which in its corm showed relationship to *Crocus biflorus* and in the black stripe on the connective of the anther to some other nearly related forms such as *Crewet*. The stripe was, however, very regular, and this may be an undescribed species. It has pale blue flowers, a lemon throat, and bluish tinge to the tube.

*Moraea polystachya*.—Prof. Barnard showed *Moraea polystachya* from the Cape, a species with glossy foliage and deep blue-mauve flowers, with the segments marked by a clear yellow blotch.

*Gladiolus maculatus*.—He also showed *Gladiolus maculatus* and a plant intermediate between that species and *G. gracilis* with very slender foliage and grey flowers. This is probably a hybrid between the species named, occurs naturally, and has been collected on other occasions.

*Romulea* sp.—A yellow-flowered *Romulea* also from S. Africa was shown by Prof. Barnard. It had slender foliage about twice the length of the flowers, which were striped outside with dark brown in the manner of many *Crocuses*. A Botanical Certificate was recommended for this plant subject to its naming.

*Hypoxis Schlechteri* was also shown by Prof. Barnard, and to it also a Botanical Certificate was recommended. It is a Cape species with small bright yellow flowers marked on the outside with a broad green stripe to each segment.

**FRUIT AND VEGETABLE COMMITTEE.**—Mr. E. A. BUNYARD, F.L.S., in the Chair, and thirteen other members present.

**Award Recommended :—**

*Hogg Medal.*

To Sir Garbutt Knott, Bt., Court Land, Exmouth (gardener, Mr. R. J. Miflin), for collection of Apples and Pears.

**Other Exhibits.**

Mr. F. Streeter, Petworth : Pear 'Bellissime d'Hiver.'

Mr. E. A. Bunyard, Allington : two forms of Apple 'Golden Russet.'

**FLORAL COMMITTEE A.**—Mr. J. M. BRIDGEFORD in the Chair, and sixteen other members present.

**Awards Recommended :—**

*Silver Banksian Medal.*

To Ashington Nurseries Ltd., Ashington, for Carnations.

To Messrs. Carter, Raynes Park, for Primulas and Begonias.

*Flora Medal.*

To Mr. A. G. Vinten, Balcombe, for Chrysanthemums.

To Messrs. Wakeley, London, for Hyacinths.

*Banksian Medal.*

To Messrs. Allwood, Haywards Heath, for Carnations.

To Messrs. Engelmann, Saffron Walden, for Carnations.

To Messrs. Low, Enfield, for Carnations and other greenhouse plants.

*Award of Merit.*

To Chrysanthemum 'Yellow American Beauty' for cutting and market (votes 12 for), from Mr. T. Stevenson, Hillingdon. See p. 135.

**Other Exhibits.**

Mr. F. Everitt, Enfield Lock : Primulas and Cyclamen.

Messrs. Greenyer, Worthing : Chrysanthemum 'Worthing Yellow.'

Messrs. Low, Enfield : Cyclamen 'Fragrance.'

The Hon. Mrs. Sebag Montefiore, Plymouth : Chrysanthemum.

**FLORAL COMMITTEE B.**—Mr. E. A. BOWLES, V.M.H., in the Chair, and twenty-two other members present.

**Awards Recommended :—**

*Silver Banksian Medal.*

To Messrs. Russell, Richmond, for Hamamelis, Azaleas and stove plants and shrubs.

*Flora Medal.*

To Messrs. Cheal, Crawley, for Azaleas, Camellias and other shrubs.

*Banksian Medal.*

To Messrs. Barr, Taplow, for Narcissi, Irises and other bulbous plants.

To Messrs. Engelmann, Saffron Walden, for *Euphorbia fulgens*.

To Messrs. Neale, Newhaven, for succulents.

To Messrs. Stewart, Ferndown, for flowering shrubs and Hellebores.

**Other Exhibits.**

Alpine Nurseries, West Moors : bulbous plants and shrubs.

G. P. Baker, Esq., Sevenoaks : *Helleborus Kochii*.

T. T. Barnard, Esq., Wareham : *Romulea* sp., *Moraea polystachya*, *Hypoxis Schlechteri*, *Gladiolus maculatus*, *Gladiolus* sp.

W. Balfour Gourlay, Esq., Cambridge : *Crocus* sp., E.K.B. 2158. See p. xl.

Hocker Edge Gardens, Cranbrook : bulbous plants.

Mr. R. Colpoys Wood, West Drayton : dwarf shrubs.

**ORCHID COMMITTEE.**—Sir JEREMIAH COLMAN, Bt., in the Chair, and twenty-one other members present.

**Awards Recommended :—**

*Gold Medal.*

To Sir William Cooke, Bt., Wylde Court, Hampstead Norris, Berks., for *Cypripediums*.

To Messrs. Armstrong & Brown, Tunbridge Wells, for *Cypripediums*.

To Messrs. H. G. Alexander, Tetbury, for *Cypripediums*.

*Silver Lindley Medal.*

To Dr. F. Craven Moore, Duckyls, East Grinstead, for *Cypripediums*.

*Silver Banksian Medal.*

To Messrs. Charlesworth, Haywards Heath, for a group.

To Guy P. Harben, Esq., Kings Somborne, for a group.

To Messrs. Sanders, St. Albans, for a group.

*Banksian Medal.*

To T. O. Stevens Perry, Esq., West Byfleet, for *Cypripediums*.

*Award of Merit.*

To *Odontioda* × 'Apoda,' Exbury var. (*Oda.* × 'Ganesa' × *Odm. crispum*) (votes 13 for, 4 against), from Lionel de Rothschild, Esq., Exbury. See p. 137.

To *Vuykstekeara* × 'Cambria,' Cannizaro var. (*Odm.* × 'Clonius' × *V.* × 'Rudra') (votes 13 for, 2 against), from E. K. Wilson, Esq., Wimbledon. See p. 137.

**Other Exhibits.**

Messrs. Harry Dixon, Wandsworth : a group.

Messrs. A. J. Keeling, Bradford : a group.

Mr. D. A. Cowan, Surbiton : a group.

Messrs. Stuart Low, Jarvisbrook : a group.

Messrs. McBean, Cooksbridge : a group.

BOOKS AND PAMPHLETS PRESENTED, PURCHASED OR REVIEWED DURING THE YEAR ENDING DECEMBER 31, 1935, AND DEPOSITED IN THE LINDLEY LIBRARY.

- 1 = Purchased.  
 2 = Sent for Review.  
 3 = Presented by the Author.  
 4 =     "     "     Mr. E. Charrington.  
 5 =     "     "     Nurserymen and Seedsmen's Association of Victoria, Australia.  
 6 =     "     "     Mr. R. G. Berkeley from the library of Miss E. A. Willmott.  
 7 =     "     "     the Contessa Margherita Martelli.  
 8 =     "     "     Miss E. E. Brown.  
 9 =     "     "     Mr. Wm. Taylor, Jnr.  
 10 =    "     "     The Brodie of Brodie.  
 11 =    "     "     Dr. Gustav Senn.  
 12 =    "     "     Mr. W. T. Stearn.  
 13 =    "     "     The University Library, Lund.  
 14 =    "     "     Dr. G. A. C. Herklots.  
 15 =    "     "     The D. Hill Nursery Co.  
 16 =    "     "     The Royal Jersey Agricultural and Horticultural Society.  
 17 =    "     "     Mr. F. J. Chittenden.  
 18 =    "     "     Mr. T. Hay.  
 19 =    "     "     Dr. Agnes Arber.  
 20 =    "     "     Mr. W. P. Lees.  
 21 =    "     "     Mr. A. A. Hutson.  
 22 =    "     "     Messrs. Arcos, Ltd.  
 23 =    "     "     Mr. E. A. Bunyard.  
 24 =    "     "     Dr. F. R. Walters.  
 25 =    "     "     Asst. Director, S. African Museum, Cape Town.  
 26 =    "     "     Mr. H. Cowley.

*Abbreviations.*—Col. pls. = coloured plates; illus. = illustrated or illustrator; ed. = editor, edited or edition; fol. = folio; trans. = translation.

For books published in London, the place of publication is not named in the entry.

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 — Winter cauliflower or broccoli. (Fruit Grower, 1932.) Illus. 4to. n.p., 1932. (3)  
 Afzelius, Adam. *De Rosis Svecanis tentamen primum*[-undecimum]. 8vo. Upsala, 1804-1813. (1)  
 Alexandre, *Frère*. Illus. See MARIE-VICTORIN. Flore Laurentienne.  
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 Allwood, Montagu C. Carnations for every garden and greenhouse. Col. pl. Illus. 8vo. (1926.) (4)  
 Ambrosini, Giacinto. Hortus studiosorum sive catalogus arborum . . . & plantarum omnium, quae hoc anno 1657 in studiosorum horto publico Bonon. coluntur. Illus. 4to. (Bologna), 1657. (1)  
 Anderson, Edgar, & Woodson, Robert E. The species of *Tradescantia* indigenous to the United States. (Contrib. Arnold Arb., ix.) Illus. 8vo. Jamaica Plain, Mass., 1935. (3)

- Anderson, M. V. Nurserymen's economics ; a paper delivered before the Nurserymen and Seedsmen's Association of Victoria [Australia] on August 6, 1934. [*Typescript.*] (5)
- Annales Agronomiques. Nouvelle série. Vol. 1, *et seq.* Illus. 8vo. Paris, 1931 *et seq.*
- Appel, Otto & Zschokke, Achilles. Taschenatlas der Krankheiten des Weinstockes. Illus. by AUGUST DRESSEL. Col. pls. 8vo. Berlin, 1934. (1)
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- Arrondeau, T. C. Études sur la flore de Toulouse. Monographie du genre *Rosa*. (Actes Soc. Linn. Bordeaux, xvi.) 8vo. [Bordeaux, 1850.] (6)
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- Barnes, Thomas. A new method of propagating fruit-trees and flowering shrubs. Illus. 8vo. 1759. (1)
- Barron, Archibald Farquaharson. Vines and vine culture. 5th ed. Illus. 8vo. 1912. (1)
- Barron, Leonard. Gardening for the small place. Illus. 8vo. New York, 1935. (1)
- Battandier, Jules Aimé, & Trabut, Louis. Flore d'Alger et catalogue des plantes d'Algérie . . . Monocotylédones. 8vo. Algiers, 1884. (1)
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(To be continued.)

# EXTRACTS FROM THE PROCEEDINGS

## OF THE

### ROYAL HORTICULTURAL SOCIETY.

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#### NOTICES TO FELLOWS.

##### SUBSCRIPTIONS.

There are still some Fellows of the Society whose subscriptions are outstanding. In view of the Chelsea Show in May a special reminder will be sent out during this month, but it would be a considerable help if Fellows whose subscriptions are in arrear would forward them as soon as possible.

##### CHELSEA SHOW.

The Chelsea Show will be held on May 20, 21 and 22, in the grounds of the Royal Hospital, Chelsea. It is gratifying to be able to report that again this year special arrangements have been made with the Automobile Association, in conjunction with the police, for the more convenient direction of traffic and parking of cars. It is proposed to issue with the May JOURNAL a special leaflet which will contain a plan, giving traffic directions and the situation of the car parks.

Fellows are reminded that the Chelsea Show is invariably very crowded between certain hours—from about noon until 4.30 P.M.—and it would add considerably to the comfort of all if more use were made of the earlier and later hours of the Show.

##### CONFERENCE ON ALPINE PLANTS.

###### *Excursions.*

The programme of the Conference on Alpine Plants was published in the March JOURNAL. The following excursions have been arranged.

On Friday, May 8, whole day excursion. The Royal Botanic Gardens, Kew, by kindness of the Director (morning); lunch at hotel *en route*; the R.H.S. Gardens at Wisley (afternoon).

On Saturday, May 9, whole day excursion. The garden of Dr. and Mrs. Fred Stoker at Loughton, Essex (morning); and the gardens of Lady Byng of Vimy, Thorpe Hall, Thorpe-le-Soken (afternoon).

During the week, May 11-18, a visit has been arranged by Dr. H. Roger Smith to the Snowdon district, together with a series of lectures, etc.

Particulars of these excursions may be had from the Secretary, R.H.S., Vincent Square, London, S.W. 1.

In addition to the above-mentioned excursions, Fellows attending the Conference are invited to visit the gardens listed in the Alpine Garden Society's Year Book. Intending visitors to these gardens must, however, themselves write to the owners stating the day and approximate time of their proposed visit. Particulars of these gardens are also obtainable from the Secretary.

###### *Luncheon.*

A luncheon will be held on Wednesday, May 6, the second day of the Conference, in the Restaurant of the New Hall, at 1.15 P.M. Tickets will be 4s. 6d., exclusive of wines, etc. The accommodation is limited, and applications will be accepted in order of priority. Further particulars are obtainable from the Secretary.

*Broadcast.*

On Friday, May 1, by kindness of the B.B.C., arrangements have been made for Lady Byng of Vimy, President of the Alpine Garden Society, to broadcast on Rock Gardening at 6.50 P.M.

## TRIAL OF GARDEN AND LAWN SPRINKLERS.

A trial of all types of sprinkler apparatus suitable for gardens and lawns will be carried out at Wisley on April 29, 1936. Makers are invited to send their apparatus to Wisley for this trial. If desired, the senders' own assistants may be present at the trial to explain and work the machines, etc., so that they may be seen to the best advantage.

A panel of competent judges will be appointed.

The hour at which the trial will commence will be communicated later, but the apparatus may be sent to Wisley any day before the trial and must be there ready for use by 9 A.M. on April 29, 1936.

The necessary entry forms may be obtained on application to the Secretary, R.H.S. Offices, Vincent Square, London, S.W. 1, or to the Director, R.H.S. Gardens, Wisley, Ripley, Surrey.

## NATIONAL ROSE SOCIETY'S EXHIBITION.

On April 24 the National Rose Society is staging a Rose Show in the New Hall. Any Fellows interested in this show can obtain full particulars from Mr. Courtney Page, Secretary, 117 Victoria Street, S.W. 1. This show was originally arranged for April 18, but has since been postponed to April 24. Fellows' tickets do *not* admit.

## ADDITIONAL LECTURE.

Fellows are asked to make a special note of the fact that a further lecture has been arranged since the printing of the ticket for Tuesday, April 21, at 3.30 P.M. in the Lecture Room of the New Hall. This will be given by Mr. E. R. Carter, on "Carnation Growing for the Amateur."

## ODONTOGLOSSUM COMPETITION.

Through the kindness of the Orchid Trade, a competition, similar to that held for Cypripediums on February 11, will be held at the Fortnightly Show on April 21 and 22 for Odontoglossums, and a silver trophy will be offered for award to the amateur who exhibits the best twenty-five plants of Odontoglossum, species and/or hybrids. Hybrids of Odontoglossum with other genera will be admissible, e.g. Odontioda, Odontonia, etc. Entries must be made on special forms obtainable on application to the Secretary, and should be received at the Society's offices not later than the first post on Wednesday, April 15.

## SEWELL MEDAL COMPETITIONS.

In view of the Alpine Conference which is being held this year, it is to be expected that particular interest will be attached to the competitions for the Sewell Medals, and the attention of Fellows and Associates is drawn to the regulations, namely:

Five medals will be offered for award, two at the Fortnightly Show on April 21, two at the Alpine Conference Show on May 5, and one at the Fortnightly Show on June 9. On each date one medal is offered for an amateur's exhibit, and on each of the first two dates one medal is also offered for a horticultural trader's exhibit. At the Alpine Conference Show the amateur's medal is offered as part of the first prize in a Class for 12 pots or pans, and the horticultural trader's medal is offered for 12 pots or pans, under the conditions set forth in the schedule of the show. All exhibits staged in competition for the medals offered for award at the two Fortnightly Shows must consist of 6 pots or pans not exceeding 12 ins. in diameter. Only one subject may be shown in each pot or pan. It is not necessary that the plants should have been grown in the receptacles in which they are shown and, if desired, plants may be lifted and potted for the purposes of the competitions. Not fewer than four plants in each exhibit must be in bloom, and plants which are not in bloom should possess decorative value when shown. The scale of points for judging will be as follows: Suitability, 24 points; Rarity, 18 points; Cultivation, 24 points. Entries must be made on special forms obtainable from the Secretary, by whom the completed forms must be received not later than by the first post on the Wednesday preceding the show.

## DAFFODIL SHOW.

Particular attention is drawn to the Daffodil Show which is being held on *Thursday and Friday*, April 16 and 17, in the New Hall. Schedules for the competitive classes in this show are obtainable from the Secretary, the closing date for entries being April 11.

There will be a special exhibit from the Society's Gardens at Wisley showing the pests and diseases from which Daffodils suffer.

In the Old Hall the Early Market Produce Show will be held.

## EARLY MARKET PRODUCE SHOW.

The attention of Fellows is also drawn to the Early Market Produce Show which is to be held on *Thursday and Friday*, April 16 and 17, in the Old Hall, whilst the Daffodil Show is being held in the New Hall. This show will be the fifth of its kind. There is an increasing interest in this show amongst market growers, and there is every reason to believe that this year the show will be a marked improvement upon previous shows, not only in quality, but also in the number of competitors staging exhibits. It is scarcely necessary to say that the encouragement of early market produce is of great importance to the country.

A lecture will be given in the afternoon of April 16 at 3.30 in the New Hall Lecture Room, by Mr. H. V. TAYLOR, Commissioner of Horticulture to the Ministry of Agriculture and Fisheries, on "Vegetables for Pickling."

## CALENDAR.

*April 4*, 1 to 7 P.M.—The London Gardens Society's Exhibition of Spring Flowers, in the Old Hall. Fellows' tickets admit free.

*April 6*.—Closing date for entries for the British Floral Art Diploma Examination.

*April 7*, 1 to 7.30 P.M., and *April 8*, 10 A.M. to 5 P.M.—Fortnightly Meeting and Show in the New Hall: Alpine Garden Society's Show in the Old Hall.

At 3.30 on Tuesday afternoon, April 7, in the Lecture Room of the New Hall, Mr. N. K. GOULD will lecture on "The Newer Primulas."

At 3.30 on Wednesday afternoon, April 8, in the Lecture Room of the New Hall, Mr. R. W. WALLACE will lecture before members of the Institute of Landscape Architects on "Water Gardens and Waterside Planting." Fellows of the R.H.S. who are interested in this subject will be welcomed.

*April 8 and 9*, 2 to 4 P.M. (weather permitting).—Demonstrations at Wisley on (1) Spring Spraying of Fruit Trees, and (2) Shrub Pruning. Fellows desiring to attend the Demonstrations should notify the Director of the Gardens beforehand, saying on which day they propose to attend.

*April 8*.—Closing date for entries for the Early Market Produce Show.

*April 11*.—Closing date for entries for the Daffodil Show.

*Thursday, April 16*, 1 to 7.30 P.M., and *Friday, April 17*, 10 A.M. to 5 P.M.—Daffodil Show in the New Hall, and Early Market Produce Show in the Old Hall. There will be a special exhibit from Wisley at the Daffodil Show, showing pests and diseases of Daffodils.

At 3.30 P.M., in the Lecture Room of the New Hall, on Thursday, April 16, Mr. H. V. TAYLOR will lecture on "Vegetables for Pickling."

*April 21*, 1 to 7.30 P.M., and *April 22*, 10 A.M. to 5 P.M.—Fortnightly Meeting, and an exhibition by the National Auricula and Primula Society in the New Hall. British Carnation Society's Show in the Old Hall.

At this Fortnightly Meeting, Odontoglossums will be particularly prominent. This show is the occasion of the competition for the Odontoglossum trophy and for the Sewell Medals for Alpines (see special notices).

At 3.30 P.M., in the Lecture Room of the New Hall, on April 21, Mr. E. R. CARTER will lecture on "Carnation Growing for the Amateur." The attention of Fellows is particularly drawn to the lecture, as it has been arranged since the tickets were printed and does not appear thereon.

At 4.30 P.M., in the Restaurant of the Old Hall, on April 21, the Lily Group will meet to discuss "Fritillaries."

*April 28*, 1 to 7.30 P.M., and *April 29*, 10 A.M. to 5 P.M.—Rhododendron Association's Show in the New Hall.

*April 29 and 30*.—A trial of Garden and Lawn Sprinklers will be held at Wisley (see special notice).

May 5, 1 to 7.30 P.M., and May 6, 10 A.M. to 5 P.M.—Alpine Show in connexion with the Conference (see special notice, p. xxxv) in the New Hall, and Fortnightly Meeting and Show in the Old Hall. A competition for the Sewell Medals will take place at the Alpine Show (see special notice, p. 1).

May 6, at 1.15 P.M. Conference Luncheon (see special notice, p. xlix).

May 11.—British Floral Art Diploma. Written Examination.

May 19–22.—Chelsea Flower Show in the Royal Hospital Grounds, Chelsea (see special notice, p. xlix).

#### WHITE FLY PARASITE.

Where the parasite of the greenhouse white fly, *Encarsia formosa*, has been introduced it proved extremely effective in checking the increase of this pest under glass and large numbers have been distributed during the past few years. The demand has become so great that, in order to meet in a measure the cost of maintaining the parasite over the difficult winter months and packing and despatching it, the Council has fixed a charge of 2s. 6d. for a supply for a small house and 5s. for a large house, and applications for it should be accompanied by the sum named. It is useless to introduce it to houses until the average temperature is about 70° F. Early application should be made since the supply is limited, and it is hoped that Fellows who have found it successful will distribute it in their neighbourhood.

#### HORTICULTURAL LITERATURE.

Fortunately for the advancement of horticulture successful cultivators of plants usually desire to impart their experiences to others, and very often set out to do this by writing a book. Sometimes, unknown to one another, two or three start to prepare accounts of the same subject at the same time, only to realize too late that interchange of views might have been mutually helpful. Furthermore, enquiries very often reach us for a book on this or that subject which might be better replied to if we knew that a new book upon it were in preparation.

The Editor would therefore be grateful if any having books on gardening in preparation would be so good as to let him know not only for his own information, but also for the benefit of enquirers.

#### WISLEY GARDENS.

##### *Demonstrations in Garden Practice.*

The third demonstration to take place this year will be held on April 8 and 9. The subjects will be "Spring Spraying of Fruit Trees" and "Shrub Pruning." Fellows intending to be present on either of these days should notify the Director, R.H.S. Gardens, Wisley, Ripley, Surrey, beforehand, so that adequate arrangements can be made.

##### *The Gardens in April.*

As might be expected, April is most prolific in the number of early-flowering Alpine plants, and the Alpine house contains much of interest in the many plants in bloom. Among the plants which may be found here the following should be looked for: *Primula eucyclia*, *P. Rockii*, *P. Dubernardiana* and *P. Forrestii* among the Chinese species, while the European members of *Primula* are also well represented. Many Saxifrages, including both species and hybrids of various sections of varied colours, *Jeffersonia dubia*, and *Jankae Heldreichii* may also be found here. The nearly related genera of *Shortia* and *Schizocodon*, both of which are useful for early flowering, should now be in good condition, while the at present rare little Japanese shrub, *Tsusiophyllum Tanakae*, a near relation to *Rhododendron*, will also be in flower.

Other plants which may be expected to be flowering in April include *Androsace*, *Narcissus*, *Celmisia*, *Cassiope* and *Daphne*, all of which are suitable for cultivation in the Alpine house.

On the Rock Garden itself each week will bring its quota of plants in bloom too numerous to mention here, such as *Rhododendrons*, *Primulas*, *Muscari* and *Saxifrages*.

In the Wild Garden the large bushes of *Camellia* will be flowering, though not with the abundance of 1935. *Rhododendron Thomsoni*, *R. campanulatum* and *R. lutescens* are to be seen here, as is also the deciduous *R. canadense*, while several fine specimens of *Pieris japonica* are this year very floriferous and attractive. *Trilliums* and *Primula denticulata* in considerable numbers enliven this part of the garden.

Ericas in the Heather Garden, such as *E. australis* and its white form 'Mr. Robert,' with the many colour shades of *E. carnea* give splashes of colour here. Adjoining the Heather Garden the trial of Narcissi must be visited. Here large numbers of varieties considered best for general garden purposes are grouped, and many newer varieties are among the 260 groups. Collected together in this manner an excellent opportunity for comparison is afforded.

Of the shrubs and small trees in Seven Acres attention must be drawn to the numerous Japanese Cherries, and species of *Prunus* such as *P. yedoensis* and *P. incisa* give promise of being very floriferous. The Almonds will also deserve a visit, especially the variety with fine individual flowers named *Pollardii*. Several small trees of this are to be found in Howard's Field.

Other plants such as the many forms of *Cydonia*, mainly colour forms of *C. japonica*, species of *Berberis*, *Pyrus* and *Spiraea* are to be seen in the borders.

In the Award of Merit Garden the most notable consist of the old specimens of *Prunus subhirtella pendula* and *Malus floribunda*, which are conspicuous. Here too are good plants of *Osmanthus Delavayi* and an excellent specimen of *Prunus incisa*.

In the greenhouses many shrubs requiring protection are in flower; among them may be mentioned *Prostanthera coccinea*, *Begonia fuchsioides*, *Erica* and *Epacris* species, *Abutilon insigne*, *Statice Zimmermannii*, *Brachyglottis repanda*, *Callistemon coccineus*.

The Half Hardy House containing plants unable to withstand the outdoor climatic conditions of Wisley shows good examples of the following: *Prostanthera Sieberi*, *P. rotundifolia*, *Candollea cuneifolia*, *Pelargonium bicolor* and other species, *Statice rosea*, Fuchsias, *Sedum prealtum*, *Aster Pappei*.

#### MEMORIAL TO P. D. WILLIAMS.

It is pleasant to report that the fund inaugurated to establish a memorial to the late Mr. P. D. Williams, V.M.H., of Lanarth, St. Keverne, has met with much support. The subscription list is, however, not yet closed, and further donations would be gratefully accepted. The memorial will take the form of medals to be awarded in connexion with Daffodils and Rhododendrons, the two plants in which Mr. P. D. Williams was especially interested, and with which his name was so intimately associated. It is hoped shortly to be able to announce the conditions under which the medals will be awarded.

#### EUROPEAN HERBARIUM ON VIEW.

As reported in the March number, the European Herbarium presented to the Horticultural Club by Mr. F. J. HANBURY is now located in the Club Room on the second floor of the R.H.S. New Hall, and the keys are available at the Society's Offices for those who desire to inspect the Herbarium. It would be convenient if Fellows who desire to see the Herbarium would give notice to the Society beforehand.

#### HORTICULTURE NEAR PARIS.

We understand that a motor tour starting on the night of Friday, May 22, 1936, is being arranged with the object of seeing (1) methods of cultivation and pruning of fruit-trees, and (2) French pleasure gardens. Private cars may be used if preferred. Travelling and accommodation at Hôtel Terminus are being arranged by Chemin de Fer de l'Etat, Paris. Inquiries should be addressed to French State Railways, 20 Cockspur Street, London, S.W. 1 (Telephone, Whitehall 6403), and usual Agencies.

Social and horticultural details may be obtained from Miss Helen Colt, F.R.H.S. (Dip. R.B.S.), The Garden Club, 9 Chesterfield Gardens, London, W. 1. Paris address, Hôtel des Champs Elysées, 2 rue d'Artois, Paris VIII.

# GENERAL MEETINGS.

FEBRUARY 11, 1936.

## Silver Grenfell Medal.

To Winifred Walker, 25 Tanza Road, Hampstead, N.W., for an exhibit of paintings of flowers of Jamaica and Panama.

## Grenfell Medal.

To Miss H. M. Coley, High Trees Road, Reigate, for an exhibit of Botanical paintings.

To Lt.-Commander J. P. W. Furse, *R.N.*, 10 Bramley Flats, Alverstoke, for an exhibit of paintings of Crocus species and hybrids.

A lecture was given by Mr. E. A. BOWLES, M.A., F.L.S., F.R.E.S., V.M.H., on "Crocuses."

Chairman, Mr. R. D. TROTTER.

**SCIENTIFIC COMMITTEE.**—Mr. A. D. COTTON, F.L.S., in the Chair, and five other members present.

*Pelargonium chimera*.—Mr. Crane reported that the chimera of the *Pelargonium* 'Flame' had been already investigated and described by Dr. Bateson and Mr. R. H. Chittenden (see p. xl).

*Effect of soil on Rhododendron growth*.—Dr. Tincker showed photographs of *Rhododendron obtusum amoenum* growing in different soils as referred to at the previous meeting, to illustrate the difference in size attained.

*Fasciated Forsythia*.—Miss Brittain sent a flowering shoot of *Forsythia intermedia* 2 inches wide at the broadest part. This *Forsythia* produces fasciated growths, usually when wide curved to a scimitar form. The present specimen came from a garden at St. John's Wood.

**FRUIT AND VEGETABLE COMMITTEE.**—Mr. E. A. BUNYARD, F.L.S., in the Chair, and fourteen other members present.

## Award Recommended :—

### Silver Knightian Medal.

To Messrs. Sutton, Reading, for collection of vegetables.

### Other Exhibit.

South African Fruits in season, staged by the Imperial Fruit Show, Ltd.

**FLORAL COMMITTEE A.**—Mr. J. M. BRIDGEFORD in the Chair, and eighteen other members present.

## Awards Recommended :—

### Silver-gilt Banksian Medal.

To Messrs. Blackmore & Langdon, Bath, for Cyclamen.

### Silver Flora Medal.

To Messrs. Allwood, Haywards Heath, for Carnations.

### Silver Banksian Medal.

To Messrs. Napier, Taunton, for Carnations.

To Messrs. Toogood, Southampton, for Primulas.

### Silver Lindley Medal.

To John Innes Horticultural Institution, Merton Park, for an exhibit of Primulas illustrating variation in colour, shape and pattern of flower, habit and leaf shape.

### Flora Medal.

To Messrs. Low, Enfield, for Carnations and other greenhouse plants.

To Napsbury Mental Hospital (gr. Mr. W. J. Jennings), St. Albans, for Cyclamen.

To Messrs. Sutton, Reading, for *Primula obconica* 'Sutton's Blue.'

### Banksian Medal.

To Ashington Nurseries, Ashington, for Carnations.

To Messrs. Carter, Raynes Park, for *Primula malacoides* in variety.

To Messrs. Engelmann, Saffron Walden, for Carnations and Euphorbias.



*Selected for trial at Wisley.*

*Primula malacoides fimbriata*, from Messrs. Carter, Raynes Park.

*Primula stellata* 'Samuel Ryder,' from Messrs. Ryder, St. Albans.

The following award was recommended after trial at Wisley :

*Award of Merit.*

To *Primula malacoides* 'Exquisite,' from Mr. W. F. Baker, Cromer. See p. 177.

**FLORAL COMMITTEE B.**—Mr. E. A. BOWLES, V.M.H., in the Chair, and sixteen other members present.

**Awards Recommended :—**

*Silver Floral Medal.*

To Messrs. Cheal, Crawley, for *Malus*, *Prunus* and other flowering shrubs.

*Silver Banksian Medal.*

To Messrs. Barr, Covent Garden, for Narcissi, Crocuses and Irises.

To Messrs. Russell, Richmond, for flowering shrubs and stove plants.

To Messrs. Stewart, Ferndown, for flowering shrubs and bulbous plants.

*Flora Medal.*

To Messrs. Hillier, Winchester, for flowering shrubs.

To Messrs. Prichard, Christchurch, for shrubs and alpine plants.

*Banksian Medal.*

To Alpine Nurseries, West Moors, for alpine and bulbous plants.

To Brookside Nurseries, Oxford, for Saxifrages.

To Messrs. Cheal, Crawley, for alpine and bulbous plants.

To Hocker Edge Gardens, Cranbrook, for bulbous plants.

To Mr. L. Lawrence, Taplow, for succulents.

To Messrs. Neale, Newhaven, for succulents.

To Messrs. Wakeley, London, S.E., for Narcissi, Crocuses and Irises.

To Messrs. Waterer, Twyford, for bulbous plants and shrubs.

To Messrs. Wm. Wood, Taplow, for bulbous and alpine plants.

*First-class Certificate.*

To *Acacia Baileyana* as a tender flowering shrub (votes 13 for), from Ingham Whitaker, Esq., Lymington. See p. 176.

**Other Exhibits.**

Messrs. Burkwood & Skipwith, Kingston-on-Thames : *Viburnum* × *Burkwoodii*.

Messrs. Clark, Dover : shrubs.

Mr. R. Colpoys Wood, West Drayton : conifers.

Mr. A. Corderoy, Eltham : Saxifrages.

The John Innes Horticultural Institution, Merton : *Centradenia floribunda*.

E. J. P. Magor, Esq., St. Tudy R.S.O., Cornwall : *Rhododendron* 'Fulgarb' (*R. fulgens* × *R. arboreum* blood red variety).

The Rev. Canon Meyer, Hertford : bulbous Irises and Crocuses.

J. D. North, Esq., Norwich : *Raffenaldia primuloides*.

Messrs. Prichard, Christchurch : *Euonymus japonicus* var. *robustus*.

L. de Rothschild, Esq., Exbury : *Sreptocarpus* sp.

Walton Park Nurseries, Walton-on-Thames : flowering shrubs.

**ORCHID COMMITTEE.**—Sir JEREMIAH COLMAN, Bt., in the Chair, and fifteen other members present.

**Awards Recommended :—**

*Award of Merit.*

To *Odontoglossum* × 'Pandaros' var. 'Mauve Queen' (*regium* × 'Rosina') (votes unanimous), from Capt. Geoffrey Brocklebank, Chinley Manor, Hawkhurst, Kent. See p. 177.

To *Cypripedium* × 'Tunbridge' ('Christopher' × 'Chardmoore') (votes 11 for), from Messrs. Armstrong & Brown, Tunbridge Wells. See p. 176.

To *Lycaste* × 'Lady Colman' (*Locusta*, Sander's var. × *Imshootiana*) (votes 14 for), from Sir Jeremiah Colman, Bt., Gatton Park, Reigate. See p. 177.

**Other Exhibits.**

Messrs. Armstrong & Brown, Tunbridge Wells : a group.

Messrs. Sanders, St. Albans : a group.

Messrs. H. G. Alexander, Tetbury : a group.

Messrs. H. Dixon, Wandsworth : a group.

Messrs. Stuart Low, Jarvis Brook : a group.

Sir Jeremiah Colman, Bt., Gatton Park, Reigate : *Cypripediums*.

Lady Leonfield, Petworth Park, Sussex : *Cypripediums*.

N. Prinsep, Esq., Pevensey : *Cypripediums*.

E. Kenneth Wilson, Esq., Cannizaro, Wimbledon : *Cymbidiums*.

**NARCISSUS AND TULIP COMMITTEE.**—Mr. E. A. BOWLES, F.L.S., V.M.H., in the Chair, and eleven other members present.

**Award Recommended :—**

*Silver Banksian Medal.*

To Messrs. R. H. Bath, Wisbech, for Daffodils and Tulips.

**Other Exhibits.**

Mr. G. P. Baker showed *Narcissus Bulbocodium* var. *monophyllus* collected in the Rif Mountains in the Spanish zone of Morocco, and a pale yellow form of that plant collected in the mid-Atlas near the Cedars.

Mr. R. F. Calvert showed a form of *Narcissus Tazetta* collected in an Egyptian oasis, although it was probably not indigenous there.

## ANNUAL GENERAL MEETING.

FEBRUARY 25, 1936.

REPORT of the ONE HUNDRED AND THIRTY-SECOND ANNUAL MEETING of Fellows, held in the Lecture Room of The New Hall, Greycoat Street, Westminster, on Tuesday, February 25, 1936.

The Lord ABERCONWAY, C.B.E., V.M.H., President, in the Chair, supported by Members of Council and about 190 Fellows.

The SECRETARY read the notice convening the Meeting.

The SECRETARY announced that the Minutes of the last Meeting, held on February 19, 1935, had been circulated in Vol. 60, Part 4, of the JOURNAL.

The CHAIRMAN then moved that the Minutes be taken as read, and that they be adopted.

The motion was agreed and the Minutes were signed by the Chairman.

The CHAIRMAN: I rise to move that the Report of the Council be and is hereby adopted.

I think there is no Fellow present at this meeting in whose mind sorrow for the death of His Majesty King George is not present. By the death of King George the Society has lost one who was a Patron in no mere formal sense, but one who took a real interest in the Society and in the Society's objects. When last spring he graciously visited our Chelsea Show, it was in the middle of his Jubilee Celebrations. We know now that his reserve of strength must have been small, and indeed on the day of the Show we were informed that his visit was likely to be a short one. But, although we were in honour bound to afford him very reluctantly every facility for curtailing his visit should he have so desired it, he in fact stayed, to our great pleasure and satisfaction, for a time even longer than was his wont. Both King George and Queen Mary have always displayed the greatest possible interest in the plants at the Chelsea Show and also in those who grow them. King George with Queen Mary became a Patron of this Society as long ago as the year of his accession to the Throne in June 1910, and thus he remained our Patron for over twenty-five years. We have been, I think, very fortunate in that the Crowned Heads of this country have always associated themselves with the Society since the early days of last century. George IV, William IV, Queen Victoria, and King Edward VII, were all patrons of our Society. King Edward VIII was, as you are aware, as Prince of Wales, a Patron, and it is hoped that as King he will continue to us his royal favour. King Edward VIII is, as it is hardly necessary to remind you, a keen and most accomplished and knowledgeable gardener. He has, moreover, created on his own initiative and partly, I believe, even by his own handiwork, on a lovely but hitherto ungardened site, a most interesting and successful garden—indeed, if I may venture to say so, a garden which is a model of what a modern garden should be. I would just add this, that the interest that the Royal Family have taken and do take in the activities of the Society, and their frequent visits to our Shows are not only matters of much satisfaction to us, but give really great encouragement both to gardeners and to gardening.

At this time last year it was satisfactory to me to be able to announce the continued progress of the Society. It is with even greater satisfaction that I can

say to you to-day that that progress has been amply maintained. The Roll of Fellowship stood at 31,684 on our census date last November, there being a net increase of nearly 1,800 Fellows for the year then ending, a greater increase than has ever been attained before in the history of the Society—the previous best year was an increase of 1,672 in 1927. To-day, the Fellowship of the Society has passed well over the 32,000 mark, and now stands at 32,150 or thereabouts.

The magnitude of these figures is a matter of constant review by your Council, who has to satisfy the ever-increasing needs of a growing family; in fact we are rather in the position of a happy father who may possibly expect twins but who is presented with quintuplets.

It may perhaps be urged in some quarters that the objects of the Society would be well served if we took steps to limit our numbers. Our Shows for one thing would be less crowded, which would be a distinct advantage, at least at some of the more popular times during the Chelsea Show. But if the Shows were less crowded, it is just possible that they might be less good, for the greater the attendance the greater the effort that will naturally be made by the exhibitors.

With the growth of the Fellowship, moreover, the revenue of the Society necessarily increases, and above all, the disposable surplus increases. This enables the Society to be, in many ways, I think, of greater service to the Fellows. The Society, for instance, can extend, as it has been doing, the scope of its publications, it can improve its library, it can extend its work at Wisley, and it can also do what a prudent Society should do, it can make reserves against a rainy day. But I think, if I may say so, that the great argument against limiting the numbers of the Society is that, after all, the primary object of the Society is to encourage horticulture. Now when we enlist an additional Fellow, I hope that we make him into a better gardener. We shower gardening literature upon him; we give him the opportunity of seeing at Wisley a garden that although it naturally does not excel in every branch of gardening, and may be perhaps deficient in some, yet has points of interest and suggestions even for the most expert of visitors. Above all, at our Shows, we spread out before him, thanks to the enterprise and skill of our friends the nurserymen, for his observation, for his criticism, and for his information, the very best that can be grown in almost every class of plant. This, and not the mere desire to see our revenues grow, is the reason why your Council does not seek to limit the Fellowship of the Society. This being its view, it does not propose to suggest to you that it should reimpose the entrance fee on the One Guinea Fellows, at any rate for the next year, 1937.

We have done in the year a good deal of important work in Wisley under Mr. Harrow's direction, and I hope that when you visit it this spring and summer you will think the improvements that have been carried out have maintained the progress of past years.

There is one special thing in regard to Wisley which I ought to mention, that is this: in connexion with the preservation of the green belt round London, the Surrey County Council, helped financially by the London County Council, are acquiring certain freehold lands adjoining and practically forming part of Ockham Common, a common which extends from the London side of "The Hut" past the lake and up on the left of the road past the Wisley Gardens. The Society has not only made a contribution towards the cost of the scheme, but has also undertaken to purchase a certain portion of the land in question. The portion which the Society is purchasing is the woodland between the Portsmouth Road and the Wisley Gardens, known as Battlestone Hill, some ten acres in extent. As part of the bargain the Society have undertaken to maintain this piece of land as a private open space, which means that it can never be developed for building, although it can of course be fenced in. The Society has further undertaken to give the public access to it on six days of the year. Otherwise, our rights over the land are those of an unrestricted freeholder. Battlestone Hill is a most lovely piece of land with fine pine and other trees upon it, which by reason of its height, is less exposed to spring frosts than our other Wisley land. We propose to plant a certain number of Rhododendrons and Azaleas among the pines, and to leave it as a wild garden.

I am glad to be able to report that last year the Shows of the Society were better attended than ever. At Chelsea there was a record attendance, and at the Autumn Show at the National Hall, Olympia, the previous figures were greatly exceeded. Of course the great number of visitors who came to London during the Jubilee festivities no doubt accounted to some extent for the increase in numbers at Chelsea, and in addition the Council had the pleasure of entertaining important deputations from Sweden, Italy and America.

We held two Conferences during the year: the first on Daffodils, the report of which appeared in the Daffodil Year Book, and although at one time it looked as if the weather would spoil the Show held in conjunction with the Conference, it

nevertheless proved a very fine exhibit of mid-season varieties. The trials of Daffodils that we planted at Wisley were much visited during the Conference.

The second Conference, as perhaps you remember, was on Cherries and Soft Fruits. This was also a success, and was very well attended alike by the trade and by amateurs. One of the best displays of cherries and soft fruits ever seen was staged by the Kent Branch of the National Farmers' Union. A report of the Conference has been published by the Society under the title of *Cherries and Soft Fruits—Varieties and cultivation in 1935*.

I should like to say a word about the Autumn Show. The Society has always been in a difficulty, as you know, in finding accommodation for its Autumn Show. In spite of the fine display at the Crystal Palace in 1934 and the suitability of the building for showing flowers, the attendance was not good, and there was, therefore, a general feeling which the Council thought it had to respect, against going there again this year. The only other suitable place, the National Hall at Olympia, is only available in alternate years, and it has therefore been decided that there will be no great Autumn Show this year, but that we shall revert to the arrangement of 1932 and hold three special shows in our own hall. Personally, I much regret this division of our Show into three, but I believe that it is necessary, and I see no reasonable alternative. Arrangements are, however, being made for the Autumn Show in 1937 to be held in the National Hall at Olympia, and in view of the increase in London's hall accommodation by the proposed buildings at Earl's Court, we hope that in future the difficulty of securing suitable accommodation for one large Show in the autumn will not be so great as it has been in the past.

Two important International Congresses were held last year: the Botanical Congress at Amsterdam and the Horticultural Congress at Rome, and the Society was represented at both. The important work of these congresses, as far as the Society was concerned, was the question of the stabilization of plant names. Changes of plant names are very disturbing and annoying to the man-in-the-street—or perhaps one might say to the man-in-the-garden. The botanists are somewhat apt to forget that the name is pre-eminently a thing invented by man for his convenience, and that the fewer the changes made, the more credit there is to the botanists concerned. However, I am glad to be able to report that the Botanical Congress, which being composed of botanists was the more difficult of the two, dealt with the matter by appointing a Committee to draw up a list of valid botanical names of the more important economic plants, which list should remain in force for ten years.

In preparation for the Horticultural Congress at Rome, a special Committee of the Society was appointed, and it drew up and submitted to the Congress a list of the names of plant species generally in cultivation. This list was of course compiled from existing sources and was based on Kew lists, recent monographs and other works of authority, but we subjected these works to revision before compiling the List. This List was accepted by the Congress at Rome and is to be in force for six years. Steps are now being taken by the Society to make this List more generally available.

While I am on the subject of nomenclature, I would like to add just this. The naming of a new species of plant is usually left by the discoverer—or introducer—and very rightly left, to the botanists, for it is for the botanist to say whether the plant is really a new species or not. Botanists have done invaluable work for us in examining such plants, but in the actual choice of a name they have in my own view done too often a great disservice to horticulture and I believe to botany itself. I give as instances many of the names chosen in recent years for *Rhododendrons* and *Primulas* because I am familiar with these genera. For the most part the names are long, they are hard to pronounce, and they are worse to remember. The gardener dislikes them, he is apt to form a poor opinion of both botany and botanists, and there is risk of a real breach being formed between botany and horticulture when we all know they ought to be the closest possible allies. I say what I have said with some regret, because I have the honour to include many botanists, and some of them the very worst offenders, among my friends. We gardeners must speak frankly of this matter, and if it is said here by me, it is said to botanists in my capacity as your representative, the representative of over 30,000 gardeners; any words, therefore, which I may say, if they have your approval, carry a weight which they would not carry if I said them in my own private capacity. I say these words believing that the vast majority of you share my views.

Your Council loses by retirement this year one who perhaps, of all living men, has done most for our Society, Lord Wakehurst. He has been a member of your Committees for some seventeen years, on your Council for sixteen years, and for some time he was your President. Through all these years he had the welfare

of the Society strong in his heart, putting aside claims both of business and pleasure—and latterly even of health—to do us service. On the Council he was a man of unerring tact and judgment and a man on whom one could rely in any possible emergency. As a gardener he was thoroughness personified, there was hardly a branch of gardening which he did not deeply and thoroughly understand. He was one of that great generation of plant-men among whom we number Mr. J. C. Williams, Mr. Vicary Gibbs, Sir Edmund Loder, Sir George Holford, Mr. P. D. Williams, and our friend Mr. Bowles. We are most deeply grateful to Lord Wakehurst for all he has done for us. He writes to me expressing his great regret that he is not able to be present here to-day. He is at his place in Sussex, and asks me to express to you all his great gratitude for the way in which the Society has always treated him, and his appreciation of the honour that you have done him in the past, and of the honour that I am going to ask you presently to do him at this meeting.

We are also losing by retirement from the Council, but only temporarily we hope, Mr. Leak. He is a tower of strength on many of our Committees as well as on the Council.

We lose also Mr. Hay, who not only is as good at bringing new suggestions before the Council as he is at bringing new plants before our Floral Committee, but also keeps the Council fully informed of the wishes and views of the professional gardeners who form so important a part of our Society.

To replace these, there will be elected to the Council, because there are no other proposals before the meeting, two old friends: Sir Daniel Hall, whose scientific and Government experience are equally of use to us; and Mr. Monro, who has great knowledge of business and unique experience of the distribution of flowers, not in Nature, but in the box. Of Colonel Messel, the new Member of Council, we expect much. We greatly appreciate the fact that a busy man such as he is prepared to give us of his time. He combines an experience of plants and books which will I know be most helpful to us.

Finally, Ladies and Gentlemen, I would like to express the appreciation of the Council and my personal appreciation of the work done for us during the year by our Secretary and his staff.

Under the old Charter you remember we used to re-elect our Secretary each year. It was since Colonel Durham joined the Society that we altered our Charter to give this up as an unnecessary formality. He has organizing ability and he has great tact, and we are very dependent upon our Secretary in those matters.

I also wish to express our gratitude to Mr. Chittenden, who has specially distinguished himself during the last few months in editing and bringing out so punctually our JOURNAL in its new form. It is a very different thing to bring out a journal twice a year at rather indeterminate dates from bringing it out punctually about the fourth of every month.

Mr. Harrow at Wisley has done wonders for the garden. Every year one sees further improvements, one sees the plants better and better cultivated.

Mr. Simmonds has organized our Shows and his skill in this is without compare. All these officers have been ably helped by their assistants, and we, the Council and myself, and I am sure the Fellows of the Society, although they have not the detailed experience of the work that the Council has, are grateful to them for all they do.

I now beg to move

THAT the Report of the Council be and is hereby adopted.

I will call upon Mr. Trotter, our Treasurer, to second that motion and make a statement upon our Accounts.

Mr. R. D. TROTTER: My Lord President, Ladies and Gentlemen,—With the present rapid increase in our Fellowship, we are making fresh facilities available for our Fellows each year, and this entails various alterations in the form of our accounts. I hope my explanation will enable you to follow these changes, especially in the first item, "Establishment Expenses," which is one of the most difficult to follow.

May I summarize this expenditure in this way: Under this heading the cost of the Book of Arrangements and its postage used to appear. This has now become the January number of our new JOURNAL, and so its cost, £980, appears under the JOURNAL heading instead of under this heading. Close investigation into the time occupied by the staff in superintending Hall Meetings, the Spring and Autumn Shows, and the two restaurants has necessitated considerably larger overhead allocations, amounting to £1,000, to these headings instead of to "Establishment Expenses." Both these items, therefore, reduce the total. As against this, annual increments, and a greater number of ball lettings, have increased

Salaries and Wages by £755, Electric Light and Gas by £265, and Repairs and Rates have increased by £262. These items increase the total, but being less than the deductions I have mentioned, the final figure appears to be £869 lower than last year. That is the explanation of the various changes we have had to make.

We now come to "The JOURNAL and Other Publications." We now have the cost of twelve monthly issues of the JOURNAL, and considering that the circulation of the JOURNAL has increased from 30,000 to 31,500, and that this total also includes the cost of the old Book of Arrangements of £980, I think you will agree that the increase shown of £1,100 is very moderate.

"Meetings."—Although the receipts at the Chelsea and Autumn Shows were well above those of 1934, greater sums in respect of overhead expenses have been allocated, as I have already told you, with the result that the total cost of meetings is approximately the same as in 1934.

The sum expended on the Lindley Library is £140 more than last year. In addition to the purchases of books, collections of paintings have been obtained, including a set of Irises from the library of the late Miss Willmott.

As regards "Special Expenditure," a further reserve of £300 has been appropriated for the printing of the JOURNAL Index, and an amount of £233 has been expended on a secondary lighting installation at Greycoat Street.

As regards the Botanical Magazine, these figures are also rather difficult to follow without explanation. Last year the Council decided to write off the asset labelled "Work in Advance," which represents expenditure made a considerable time ahead in preparing plates for future volumes. In some cases these plates prove unsuitable and will not be used. Last year's figures of £698 represented an accumulation of these expenses over a number of years. The figure of £150 is the expenditure of this nature during 1935. The other figure you see, £770, is work on the present volume less sales. All the other items of expenditure are normal.

Turning now to the Receipts, owing to an increase of 1,768 in the Fellowship, the receipts from subscriptions are up by £2,171.

There is also an increase of £2,216 in Hall Lettings, due to an exceptionally favourable letting year.

These two items mainly account for the increase in the excess of revenue over expenditure.

I now come to the Balance Sheet. On the Liabilities side, Capital Fund Account remains the same. Sundry Creditors at £3,798 includes the reserve of £1,000 for the JOURNAL Index, also the issues of the JOURNAL now in course of printing and Schedule A Income Tax. The figures for the various funds have been simplified by bringing in the total figure only, and not showing the changes which have occurred during the year, as these can be readily traced on the Assets side.

Turning to the Assets side, Capital Expenditure Account remains the same. This shows the amount which has actually been spent on the two halls, but does not in any way purport to be the present market value of these two halls. We have, as you see, a Depreciation and Renewals Fund as well as a Sinking Fund. This latter has been increased by £3,729.

Sundry Debtors are normal.

After investing £10,000 under General Investments, the Cash Balance stands at £486.

I come now to the Wisley Revenue and Expenditure Account. The ordinary expenditure at Wisley is higher by some £200. The increase is due to two appointments, an assistant to the Director, and an assistant Mycologist. The cost of the plant distribution was £185 less than last year, but the receipts for packing and postages were also less by £132.

On the Receipts side, dividends show an increase of £78 due to Depreciation Investments and Endowment Fund Investments. Contributions to Fruit Trials were £324 more than last year, but this is explained by the fact that only the balance of the Ministry's grant, £125, was received in the last financial year.

Sales of fruit and garden produce are down by £394. This was due to the failure of the fruit crops caused by the May frosts. This year the Fruit Sales were £114 as against £547 the year before.

The balance carried down is £12,251 as against £11,931, so that there is a difference of only £320 in the net running costs at Wisley, apart from the special expenditure which I come to next.

The old electrical plant has been disposed of and the supplies are now taken from the main. The lighting of the laboratory and other buildings has been brought up to date, and electric pumps have been installed to ensure ample water supplies and overhead irrigation of the Rock Garden.

New lavatory accommodation has been erected, and rather than capitalize all these items the Council decided that the best policy would be to write them off to revenue.

There is very little change on the Wisley Balance Sheet. On the Liability side, the funds have been treated in the same way as those in the Vincent Square Balance Sheet. On the Asset side, additions have been made to the Library and to Depreciation Investments, and plant and loose effects have been reduced by depreciation.

A new Trust Fund appears this year, namely "The Colman Fund." This represents the amount of £1,000 received from Sir Jeremiah Colman in commemoration of his Golden Wedding. The sum has been invested in  $3\frac{1}{2}$  per cent. War Loan and the interest has also been invested.

This year we give you a complete list of Investments held under the various accounts and funds which are printed at the end of these Accounts.

Few of our Fellows come into personal touch with our staff in this office, but when they do I believe they are fully satisfied. I see a good deal of the staff here myself, and I certainly am.

I have much pleasure in seconding the adoption of the Report.

The CHAIRMAN: Before this resolution is put, does any Fellow wish to ask a question or raise any point?

Dr. DENHAM: My Lord Chairman, I wish to raise the subject of the distribution of plants at Wisley. May I ask whether the Council will consider the appointment of a Committee to report on the present situation as regards the distribution of plants, and to make suggestions for future modifications? We are told "these are plants which are surplus to the requirements of the Wisley Gardens, and as the Gardens become fully planted the number available may be diminished."

My Lord, I question whether that can still be seriously maintained. I think it is an open secret among all constant visitors at Wisley that the great bulk of these plants is specifically raised for distribution to members. When one comes to look at that little yellow book which one gets every year, if one counts up the plants which are being distributed, one comes to the conclusion that 61·6 per cent. of them are unproven seedlings. Now it is not good policy on the part of a great Society like this to propagate and disseminate unproven seedlings. We who raise seedlings in large quantities ourselves know the chances of a seedling being as good or better than its parent are something of the order of one thousand to one. Supposing there is that thousandth plant which is better than or as good as its parents, what are the chances of its being perpetuated as a garden plant? These plants which are sent out from Wisley are, as the Report says, very small and have to be most tenderly nursed. It is my experience that the average country Fellow of the Society is a person with a small garden, and that there is a huge mortality in these plants. I will, however, say this, that in the last twenty years—and I have been a member of the Society for more than twenty years—there has been a tremendous improvement in the plants sent out from Wisley. Those sent out now are bigger and stronger and very much better; but two of the worst weeds I ever had in my life came from one parcel of the plants distributed.

The number of these plants is very considerable indeed. I gather that the applications have doubled in the last ten years and in the last Report the number was given as something just under 14,000. I have no means of knowing the exact quantity of plants sent out, but I estimate it as between fifty and seventy thousand. That is a very large number. The preparation of these plants for distribution must mean a very heavy burden on the Wisley gardeners. Anyone who goes down there in the autumn can see the Propagating Department simply choked up with them.

Now the Balance Sheet professes to show the cost of distribution and amounts received for it, but I must remind you that this records only such items as the expenditure in connexion with packing and postage. The labour which raises these plants is not separately put down in the Account, neither, I believe, is the clerical service at Wisley which deals with this immense volume of applications.

I have been comparing last year's Accounts with the Revenue Accounts of Wisley for 1928, which I think is a comparable year. It was the year before the economic collapse began to affect us seriously in this country. As far as I can make out from these years, the expenditure at Wisley and on these services has gone up by £1,350. Wages and salaries have gone up by £2,664 and as far as I can gather the purely garden expenditure has gone down by £380. I do not think that is fair. The average member of the Society nowadays is the small

country member. It is becoming more and more difficult for him to come up to London to the Fortnightly Shows, but as in nearly every instance he now has a motor-car, it is very much easier for him to go to Wisley than it was, say, fifteen years ago, and these people do go. I am speaking this afternoon not merely as an obscure country member myself, but as the spokesman of a group of equally obscure members, knowing that they are all regular, frequent and most enthusiastic visitors to Wisley. We do feel that Wisley ought to be more fully supported by the Society than it has been in the last few years. At the moment the total income of Wisley is something rather less than a quarter of the revenue of the Society. Ten years ago there seemed always to be an item in the Accounts of £100 or £200 spent on shrubs and plants. These sums have dropped in the last few years and there are now many glaring deficiencies in consequence. It is true that last year the Treasurer told us that some £200 has been spent on the herbaceous border. My Lord, that is a libel on Wisley. It was not spent on the border at all, but on some rather ordinary Coniferous shrubs to serve as a background for the border.

I would like the Council to consider whether it would not be a good gamble, whether it might not even be sound policy, for the Director and the Keeper of the Gardens to be authorized to spend some hundreds of pounds a year on making up the deficiencies at Wisley. They are both good Scotsmen, and I think they would spend the money very well. I would like to see them not hampered in any way by the activities of a Committee. Committees are very good at spending large sums, but when it comes to spending a few shillings on a new shrub or plant, I would rather trust the individual.

I have referred to the deficiencies at Wisley, and I must make some mention of one or two of these. Take the ornamental vines, for instance; there are something like forty good ornamental vines grown in gardens, of which I grow perhaps fifteen myself. Wisley, I believe, has less than four. On the other hand, they have a marvellous collection of fruiting vines taking up a house to themselves and these fruit vines have been "very sour grapes" to me for a long time. I have never tasted a grape of them yet. I do not think the average country member of the Society is interested in the difference between a Cannon Hall and an Alexandria.

The other deficiency is the roses. I was severely shocked last summer when I went down to Wisley especially to see how that outstanding new rose (Karen Poulsen) behaved in the garden. There was none in the collection at Wisley anywhere, and that rose had been on the market two years. I am probably touching on a very sore point in connexion with these roses. In the back numbers of the JOURNAL I saw somewhere about 1931 that there was some dissension between this Society and the Rose Society, and as the result, our Society made great efforts to start a competitive display of roses, and it was to have a display of new roses every year and start a "Wisley Award" for the best roses. That seems to have fizzled out. Nowadays at Wisley the roses might perhaps best be known as the hundred second-best roses; the new roses are not being shown. I do not think it is right and proper that members of a great Society like this should be compelled to go to the grounds of another Society to see the outstanding new varieties which have reached the catalogues.

Before I sit down, I would like to say how much we country members do admire and respect the work which is being done at Wisley at the present time. I cannot, myself, speak too highly of the advisory service which we get from Wisley. Any problem you take there, whether a garden difficulty, a mycological problem, or an insect pest, is dealt with extraordinarily well. In my own work I have a good deal of experience of advisory services. It is very easy nowadays, only too easy, to get an authoritative statement on a problem from a scientist, but in nine cases out of ten it is very difficult to swallow that statement when one gets it; at Wisley the advice is tempered with humanity, common-sense and tact, and in my own experience it is always good advice.

I am afraid I have kept this meeting from the next item too long, but may I as a final suggestion ask that if a Committee is instructed to go into this question of the distribution of plants, that it shall be asked to co-opt a number of these obscure small gardeners of whom I have spoken? I rather miss the golden days of the Society when the country doctor and the country parson were important people in its councils. I would like to see men of this type, who have sympathetic knowledge and understanding of the problems of the small garden owner, appointed to the Committee which I have suggested.

Mr. ELLIS: By the courtesy of the Chair, may I be permitted, my Lord, not to make a speech, but to ask a question duplex in its character, which need not detain the meeting to-day for more than a minute. That is, whether the Editor



of the JOURNAL or the Council or another authority will consider giving us supplementary information beyond what we now possess in relation to the change made in the JOURNAL, and in the change made in the admission of members to this Society—the pros and cons, the advantages and disadvantages are the things that I have in mind.

Miss HELEN COLT : In view of the question of Wisley having been brought up, perhaps I might ask briefly whether the grant of the Ministry of Agriculture has been given back ?

The CHAIRMAN : Does any other Fellow wish to speak ?

Mr. B. PRATT : Am I in order at this stage to enquire whether tea could be provided in the garden at Wisley on Saturdays and Sundays and public holidays ?

The CHAIRMAN : If there is no other question, I will answer those that have been put.

The last speaker asked whether tea could be provided at Wisley. That has been considered very carefully, but the Council has come to the conclusion, in view of the fact that there is quite an excellent hostelry within three or four hundred yards of Wisley, and that the demand for tea would be very sporadic and irregular—a big demand on some days and no demand at all on other days—that at present at any rate it should not provide anything in the nature of a refreshment kiosk.

Then Miss Colt spoke of the Fruit Trials at Wisley. I am glad to learn that she so much appreciates the work that we have done in this direction. I think she must have misunderstood me if she thought that the grant of the Ministry of Agriculture had been taken away. It was never taken away, it was reduced owing to motives of economy ; it is still continuing on last year's scale. On the other hand, as the fruit trees have matured, more fruit is produced, so that the receipts from the sale of fruit help to some extent to fill up the deficiency.

Then Mr. Ellis asked a question about the JOURNAL and about the Fellows. The admission of Fellows to-day is precisely the same as it was in the past, except that while the One Guinea Fellows used to have to pay One Guinea subscription plus one Guinea entrance fee, the entrance fee is for the time being done away with. I think the actual method of electing Fellows is rather more simple. Instead of having what purported to be a General Meeting of the Society, which in fact was never attended by any Fellows but the Members of the Council, the names of prospective Fellows are now put up in the Entrance Hall for a certain period and then they are elected by the Council.

Dr. Denham will not, I think, expect me to follow all his views or criticisms of Wisley. They were very interesting to me and I will certainly put before the Council the question of the appointment of a Committee to consider the distribution of plants. It is rather a difficult question, that distribution of plants. The ideal method no doubt would be to distribute seeds only, as is done by so many botanical gardens. But there are two things against this. In the first place, Fellows on joining the Society are rather led to expect that they will be allowed to share in the distribution of plants. That is one difficulty ; the other difficulty is that a good many Fellows have not facilities for raising seeds. Therefore, what we do is that we take the seeds—either grown in the garden or sometimes coming from abroad—and we raise a number of these seeds to the small plant stage, and then we distribute these small plants. We are always endeavouring to raise the standard of the plants distributed, but we can judge from the demands made by Fellows what kinds of plants are most welcome, and we rather guide ourselves by this. It is curious, and if I may say so, a little disappointing, that a great many Fellows choose the commoner plants. I would rather they applied for the somewhat newer plants, but a great many still ask for the old plants, and that is why when we raise these plants from seed we have to raise a large number of the older plants.

I do not agree with Dr. Denham when he says we ought not to send out untried seedlings. Hope springs eternal in every breast, and when you get an untried seedling it is very interesting to raise it, even if in some cases it falls short of your expectations. But we do get seeds from such plants as makes it very probable that the offspring will be a good garden plant.

Dr. Denham said he thought we were rather letting Wisley down. May I assure him that that is not in any way the case. We are always improving Wisley. No purchase of plants for which Mr. Harrow asks is refused, indeed the Council has always impressed upon the Director of Wisley the desirability of getting as many new plants as possible.

I am sorry if there is any deficiency in the roses. Perhaps if Dr. Denham does us the honour of visiting Wisley, as I hope he will do this summer, he will find some of these deficiencies made up, because we have made a big new planting of roses.

With regard to the herbaceous borders, the expenditure he says was mostly on some dingy evergreens. He refers to the new hedges which form the background for the flowers, but it must be remembered that a lot of the expenditure was buried underground. It consisted in trenching, draining and manuring, without which three things no herbaceous border can be a success at Wisley.

One more word about the roses. It is quite true that we had a rose trial at Wisley. The National Rose Society took up the question of rose trials with great energy. They carried them out on land which was far more suitable for growing roses than Wisley ever could be. We thought it a waste of horticultural effort to have two systems of trials going on simultaneously, and therefore we gracefully stood back in favour of the younger Society. We thought we would grow instead examples of the best roses that would do well at Wisley. That is our policy at present and that on the whole I think will be a more useful policy for Fellows than trying out the very newest roses, always bearing in mind that these trials are being made at the same time by the National Rose Society.

I hope that Dr. Denham when he next goes down to Wisley will have a talk to Mr. Harrow on some of the points he has raised. He will find Mr. Harrow very receptive of any new suggestions, and I am sure that Dr. Denham will be able to make suggestions of value to Mr. Harrow and to the Wisley Committee.

I put the motion to the meeting—namely,

THAT the Report of the Council be and is hereby adopted.  
(Motion put and carried unanimously.)

Mr. C. T. MUSGRAVE: There is only one nomination for President of the Society this year, and in accordance with Byelaw 57, I hereby declare Lord Aberconway duly elected as President of the Society for the coming year.

The CHAIRMAN: I feel it a very, very great honour indeed to be re-elected as President of this great Society. The work of the Society is very dear to my heart, and I can assure you that I will do my very best to carry out any duties that may be imposed upon me in the interests of the Society.

I declare the election of the following gentlemen as Vice-Presidents:

The Duke of Bedford.  
The Duke of Portland.  
The Viscount Ullswater.  
Lord Wakehurst.  
The Rt. Hon. Sir Herbert Maxwell, Bt.  
Sir Daniel Hall.  
Lt.-Col. Sir David Prain.  
Mr. E. A. Bowles.  
Mr. C. T. Musgrave.  
Mr. C. G. A. Nix.  
Mr. J. C. Williams.

I declare the election as Members of the Council of:

Sir Daniel Hall.  
Lt.-Col. L. C. R. Messel.  
Mr. George Monro.

I further declare the election as Treasurer of Mr. R. D. Trotter.

I also declare the election as Auditor of Mr. J. S. Feather of Messrs. Harper, Feather & Paterson.

### PRESENTATIONS.

**Victoria Medals of Honour.**—To British Horticulturists resident in the United Kingdom and deserving special honour at the hands of the Society.

The PRESIDENT: The first name on the list to receive the Victoria Medal of Honour is that of Lord Wakehurst, to whom I have referred in the remarks I have already made, but I would just like to add this, that the Roll of the Victoria Medal of Honour we have always felt to be incomplete without Lord Wakehurst's name upon it. He would have received that medal very many years ago had he not always refused to take it while he was a member of the Council of the Society. Now that he has retired from the Council, he has signified his willingness

to accept it, and I think that the Society never had a more worthy recipient on whom to bestow it. The medal has been sent to Lord Wakehurst. I would like at the same time to declare the presentation to Lord Wakehurst of the Veitch Memorial Medal in gold. That also has been already sent to him.

I have only to add Lord Wakehurst has written to me expressing his gratitude for these horticultural honours that have been conferred on him and greatly regretting his inability to be present here to-day.

The SECRETARY : Mr. W. B. Cranfield.

The PRESIDENT : Mr. Cranfield, I have great pleasure in presenting you with the Victoria Medal of Honour. You are well known to our Fellows as a great grower of Daffodils. We congratulate you and hope you may long live to enjoy the honour.

The SECRETARY : Sir Daniel Hall.

The CHAIRMAN : Sir Daniel Hall is unfortunately unable to be present here to-day. We know him as a most distinguished scientist who has done very much towards the latest scientific discoveries in plant breeding. He is also a very worthy member of this Roll of Honour.

The SECRETARY : Mr. C. F. Langdon.

The CHAIRMAN : Mr. Langdon, I have very great pleasure in presenting you with this Medal. We well know your wonderful exhibits of Delphiniums and Begonias. Your Delphiniums I hope will always stick to the true blue, I do not like these off-colour Delphiniums. As for your Begonias, I think there are very few times when you have exhibited Begonias that you have not got a Gold Medal. There was one time when Mr. Langdon exhibited Begonias at the Chelsea Show. The Council was rather stiff in giving Gold Medals that year, because he did not get one, and I did not get one either. I thought he ought to have had one, and I hope that he thought I ought to have had one.

The Associateships of Honour were then conferred on the following :

Mr. H. J. MOORE, Horticultural Consultant to the Ontario Government.

Mr. F. TUSTIN, Head Gardener at Abbotswood, Stow-on-the-Wold.

Mr. JOHN WORT, of Messrs. Dickson & Robinson, Ltd., Manchester.

**The Lawrence Medal.**—To Messrs. Sutton & Sons, Ltd., for their exhibit of Greenhouse Plants from Seeds staged at the Chelsea Show in May 1935.

**The Holford Medal.**—To Dr. F. Craven Moore, for the exhibit of Cypripedium hybrids raised by himself and staged on January 8, 1935.

**Veitch Memorial Medal in Gold.**—To Mr. A. D. Cotton, for his services to Horticulture.

**Veitch Memorial Medal in Gold.**—To Dr. E. J. Salisbury, for his book, "The Living Garden."

**Veitch Memorial Medal in Gold.**—To Lord Wakehurst, for his services to Horticulture.

**Veitch Memorial Medal in Silver.**—To Mr. E. H. Woodall, for his services to Horticulture.

**The Sander Medal.**—To Messrs. Clarence Elliott, Ltd., for *Kalanchoe Blossfeldiana*, shown on April 2, 1935.

**The George Moore Medal.**—To Mr. Lionel de Rothschild, for Cypripedium 'Balaclava,' shown on November 5, 1935.

**Williams Memorial Medals.**—To Messrs. R. Bolton & Son, for their exhibit of Sweet Peas staged at the Chelsea Show in May 1935.

To Messrs. Sutton & Sons, Ltd., for their exhibit of Cyclamen staged on November 26, 1935.

**The Reginald Cory Cup.**—To Mr. Lionel de Rothschild, for his Rhododendron 'Albatross,' Exbury variety (*R. discolor* × *R. Loderi*), shown on June 4, 1935.

**The Loder Rhododendron Cup.**—Mr. A. Rehder, of the Arnold Arboretum, U.S.A., who, by his writings, has added so much to the knowledge of the Genus Rhododendron.

That concludes our presentations, ladies and gentlemen.

## lxvi PROCEEDINGS OF THE ROYAL HORTICULTURAL SOCIETY.

Col. STEPHENSON CLARKE: I am sure you would wish to pass a Vote of Thanks to our Chairman, Lord Aberconway, for presiding over our Meeting to-day. Lord Aberconway has given us a most eloquent and interesting address, and he has worked at all times extremely hard for the welfare of the Society. He is reaping now a rich harvest in its abounding prosperity and in the gratitude of the subscribers. I beg to move a very hearty Vote of Thanks to him.  
(Motion put and carried with acclamation.)

The CHAIRMAN: I am very much indebted to Col. Stephenson Clarke for proposing and to you for so heartily accepting this Vote of Thanks.

### GENERAL MEETING.

FEBRUARY 25, 1936.

#### *Silver Grenfell Medal.*

To Mr. H. A. Thomerson, Loughton, for an exhibit of drawings of plants and shrubs.

To Winifred Walker, Hampstead, for an exhibit of paintings of Californian flowers.

#### *Grenfell Medal.*

To Mr. A. H. Powell, 9 Bayley St., W.C. 1, for an exhibit of orchid paintings.

To Miss Dora Ratman, Balham, for an exhibit of paintings of flowers.

To Mrs. Norman Stone, Cranleigh, for an exhibit of flower paintings.

To the City of Birmingham School of Arts and Crafts, for an exhibit of water-colour drawings by pupils, age 14-16 years.

**SCIENTIFIC COMMITTEE.**—Mr. E. A. BOWLES, M.A., F.R.E.S., F.L.S., V.M.H., in the Chair, and four other members present.

*Beetles attacking seed of Astragalus Durhamii.*—Mr. Fox Wilson showed seed of *Astragalus Durhamii* from its native habitat, 87 per cent. of which had proved to be attacked by a species of *Bruchus*, which he also showed. Three of the beetles had been bred out and proved to be nearly allied to *Bruchus chinensis* but had not yet been identified with certainty.

*Juvenile shoots on Pinus Pinaster.*—Dr. Tincker showed a branch of *Pinus Pinaster* from a tree about 18 years old with small shoots near the extremity of last year's growth bearing juvenile foliage. The exact origin of these branches was obscure and the terminal bud did not appear to have been damaged.

*S. African plants.*—Two plants collected by Mrs. Milford were sent from Floral Committee B and identified as *Albuca altissima* and *Pelargonium crispum minus*.

**FRUIT AND VEGETABLE COMMITTEE.**—Mr. E. A. BUNYARD, F.L.S., in the Chair, and seventeen other members present.

#### **Award Recommended:—**

##### *Silver-gilt Hogg Medal.*

To Messrs. Rivers, Sawbridgeworth, Herts, for Citrus Fruit Trees in pots.

#### **Other Exhibit.**

Mr. J. Loader, Bridlington, Yorks: seedling Orange.

**FLORAL COMMITTEE A.**—Mr. J. M. BRIDGEFORD in the Chair, and sixteen other members present.

#### **Awards Recommended:—**

##### *Silver-gilt Banksian Medal.*

To Messrs. Bath, Wisbech, for Daffodils, Tulips, Hyacinths, etc.

To Messrs. Sutton, Reading, for Cinerarias.

##### *Silver Flora Medal.*

To Messrs. Allwood, Haywards Heath, for Carnations.

##### *Silver Banksian Medal.*

To Ashington Nurseries, Ashington, for Carnations.

To Mr. G. H. Dalrymple, Bartley, for Freesias.

To Messrs. Dobbie, Edinburgh, for Crocuses.

To Messrs. S. Low, Enfield, for Carnations and other greenhouse plants.

To Messrs. Napier, Taunton, for Carnations.

To Messrs. Wakeley, London, for Crocuses.

*Flora Medal.*

To Messrs. Blackmore & Langdon, Bath, for Cyclamen and Primroses.

*Banksian Medal.*

To Mr. W. F. Baker, Cromer, for *Primula malacoides* 'Exquisite.'

To Messrs. Engelmann, Saffron Walden, for Carnations, Gerberas, and Echeverias.

To Swanley Horticultural College, Swanley, for Begonias and Hippeastrums.

*Award of Merit.*

To Freesia 'Renown' for cutting (votes unanimous), from Mr. G. H. Dalrymple, Bartley, near Southampton. See p. 176.

*Selected for trial at Wisley.*

*Primula sinensis* 'Giant Coral,' from Messrs. Brooks, Basingstoke.

**Other Exhibits.**

Messrs. Clark, Dover : Primroses, Helleborus, etc.

Messrs. Ryder, St. Albans : *Cyclamen persicum* 'Sweet Memories.'

**FLORAL COMMITTEE B.**—Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and twenty-five other members present.

**Awards Recommended :—***Silver-gilt Banksian Medal.*

To Lady Beit, Welwyn, for a group of Codiaeums.

*Silver Flora Medal.*

To Messrs. Cheal, Crawley, for flowering shrubs.

To Messrs. Russell, Richmond, for flowering shrubs.

To Mr. George Welch, Cambridge, for Saxifrages and other alpine plants.

*Silver Banksian Medal.*

To Brookside Nurseries, Oxford, for Saxifrages.

To Hocker Edge Gardens, Cranbrook, for bulbous plants.

To Messrs. Prichard, Christchurch, for alpine and bulbous plants.

To Messrs. Waterer, Bagshot, for flowering shrubs.

*Flora Medal.*

To Alpine Nurseries, West Moors, for alpine and bulbous plants.

To Messrs. Barr, Covent Garden, for Narcissi and other bulbous plants.

To Messrs. Waterer, Twyford, for alpine and bulbous plants.

*Banksian Medal.*

To Messrs. Burkwood & Skipwith, Kingston-on-Thames, for *Viburnum Burkwoodii* and other shrubs.

To Messrs. Cheal, Crawley, for alpine and bulbous plants.

To Dartington Hall, Totnes, for flowering shrubs.

To Messrs. Hillier, Winchester, for flowering shrubs.

To Messrs. Maxwell & Beale, Broadstone, for alpine plants.

To Messrs. Neale, Newhaven, for succulents.

To Messrs. Stewart, Ferndown, for alpine and bulbous plants.

To Messrs. Wm. Wood, Taplow, for alpine and bulbous plants.

*Award of Merit.*

To *Acacia* sp. as a flowering shrub for the cold greenhouse (votes 18 for), from Lionel de Rothschild, Esq., Exbury.

To *Aloe variegata* as a flowering plant for the cool greenhouse (votes 14 for), from Mrs. Vera Higgins, Croydon. See p. 176.

To *Homeria Comptonii* as a flowering plant for the cool greenhouse (votes 17 for), from T. T. Barnard, Esq., Wareham. See p. 177.

To *Homoglossum Merianella* as a flowering plant for the cool greenhouse (votes 14 for, 3 against), from T. T. Barnard, Esq., Wareham. See p. 177.

To Saxifraga 'Cranbourne' as a flowering plant for the rock garden and alpine house (votes 18 for, 1 against), from Messrs. M. Prichard, Christchurch. See p. 177.

*Preliminary Commendation.*

To Saxifraga 'Buttercup' as a flowering plant for the rock garden and alpine house (votes 17 for), from Messrs. M. Prichard, Christchurch.

**Other Exhibits.**

G. P. Baker, Esq., Sevenoaks : *Colchicum libanoticum*, *Fritillaria libanotica*.

T. T. Barnard, Esq., Wareham : *Gladiolus viperatus*, *Lachenalia purpureo-coerulea*, *Lachenalia* sp.

Mr. A. Corderoy, Eltham : alpine plants.

Miss Hopkins, Coulsdon : alpine plants.

Mr. W. E. Th. Ingwersen, East Grinstead : *Saxifraga Sundermannii* major.

- Mr. J. J. Klinkert, Richmond : clipped Box trees.  
 Mr. L. Lawrence, Taplow : succulents.  
 Marsden Nurseries, Ashted : alpine plants and Hyacinths.  
 Mrs. H. Milford, Chedworth : *Pelargonium crispum minus*, *Albuca altissima*,  
 alpine plants.  
 Owermoigne Nurseries, Dorchester : alpine and bulbous plants.  
 Messrs. Prichard, Christchurch : Saxifraga 'Iris Prichard.'  
 Messrs. Redgrove & Patrick, Sevenoaks : shrubs and alpine plants.  
 Messrs. Rogers, Southampton : dwarf Conifers.  
 Walton Park Nurseries, Walton : shrubs.  
 Mr. R. Colpoys Wood, West Drayton : shrubs.

**ORCHID COMMITTEE.**—Sir JEREMIAH COLMAN, Bt., in the Chair, and sixteen other members present.

**Awards Recommended :—**

*Silver Banksian Medal.*

- To Messrs. Charlesworth, Haywards Heath, for a group.  
 To Messrs. McBean, Cooksbridge, for a group.

*Banksian Medal.*

- To Messrs. Armstrong & Brown, Tunbridge Wells, for a group.  
 To Messrs. Stuart Low, Jarvis Brook, for a group.  
 To Messrs. H. G. Alexander, Tetbury, for a group.

*Award of Merit.*

- To *Cypripedium* × 'Charmaine,' Westonbirt var. ('Marne' × 'Hestia')  
 (votes 11 for, 3 against), from Messrs. H. G. Alexander, Tetbury. See p. 176.  
 To *Cypripedium* × 'Ganges' var. 'Catherine Armstrong' ('Hecuba' ×  
 'Hesketh') (votes 11 for, 3 against), from Messrs. Armstrong & Brown, Tun-  
 bridge Wells. See p. 176.

*Cultural Commendation.*

- To Mr. Dunster, Orchid Grower to E. R. Ashton, Esq., Tunbridge Wells, for  
*Platyclinis glumacea*, with 67 flower-spikes.

**Other Exhibits.**

- G. P. Harben, Esq., King's Somborne : *Cymbidium* × 'Eagle.'  
 E. Kenneth Wilson, Esq., Wimbledon : *Cymbidium* × 'Rosanna.'  
 Capt. Geoffrey Brocklebank, Hawkhurst : *Odontoglossum* × 'Neron.'

**NARCISSUS AND TULIP COMMITTEE.**—Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and twelve other members present.

**Awards Recommended :—**

*Flora Medal.*

- To Messrs. Carters' Tested Seeds, Raynes Park, for Tulips.

*Banksian Medal.*

- To Messrs. J. R. Pearson, Lowdham, for Daffodils and Tulips in bowls.

**JOINT RHODODENDRON COMMITTEE.**—Mr. J. B. STEVENSON in the Chair, and six other members present.

**Exhibits.**

- E. J. P. Magor, Esq., Lamellen, St. Tudy, Cornwall : *R.* × 'Cornsutch'  
 (= Almondtime A.M. 1925), *R.* × *Nobleanum*, Lamellen var.

FEBRUARY 26, 1936.

Mr. THOMAS HAY, M.V.O., V.M.H., in the Chair.

A lecture was given by Mr. H. J. MOORE, on "Canadian Gardens."

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(Cont. from p. xlviii.)

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(To be continued.)

## NOTICES TO FELLOWS.

## VOL. LXI.

*Programme of Conference.*

TUESDAY, MAY 5, 1936, AFTERNOON SESSION, 3-5.

*Chairman.*—Lord ABERCONWAY, C.B.E., V.M.H., President of the Royal Horticultural Society, supported by The Viscountess BYNG OF VIMY, President of the Alpine Garden Society.

Introductory Address by the President of the Royal Horticultural Society.

"Rock Gardening of Different Periods in Different Countries," by Lady ROCKLEY, C.B.E., and Mr. CLEVELAND MORGAN (Canada).

"The Rise of Modern Rock Gardening and its Future," by Mr. R. WALLACE.

WEDNESDAY, MAY 6, 1936. MORNING SESSIONS, 11-1 P.M.

*Chairman.*—Dr. H. ROGER-SMITH.

"Utilization of Natural Slopes," by Mr. GEORGE DILLISTONE.

"Utilization of Flat Sites," by Mr. W. E. T. INGWERSEN.

AFTERNOON SESSION, 2.30-5.

*Chairman.*—Mr. E. A. BOWLES.

"Cultivation of Rock Plants: General," by Mr. R. E. COOPER.

"Difficult Rock Plants," by Mr. C. T. MUSGRAVE.

THURSDAY, MAY 7, 1936. MORNING SESSION, 11-1 P.M.

*Chairman.*—The Viscountess BYNG OF VIMY.

Rock Gardening in Sunny Countries—

"Rock Gardening in South Africa," by Miss STANFORD (S.A.).

"Rock Gardening in California," by W. HERTRICH (U.S.A.).

AFTERNOON SESSION, 2.30-5.

*Chairman.*—Dr. FRED STOKER.

"The Alpine House," by Mr. P. ROSENHEIM.

"Propagation," by Mr. M. PRICHARD.

The following are among those who have promised to take part in the discussions: Messrs. F. BARKER, J. W. BESANT, AYMON CORREVON, CLARENCE ELLIOTT, R. L. HARROW, S. JACOBS, Dr. JENKIN, Mr. GAVIN JONES, Professor LYTTEL, Messrs. R. H. MACAULAY, RENTON, Major F. C. STERN, Dr. STOKER, Capt. SYMONS-JEUNE, Messrs. J. T. WALL, BEN WELLS, JOHN WOOD.

*Luncheon.*

The Conference Luncheon will take place on Wednesday, May 6, at 1.15 P.M. in the restaurant of the New Hall.

The following excursions have been arranged in connexion with the Conference.

On Friday, May 8, whole day excursion. The Royal Botanic Gardens, Kew, by kindness of the Director (morning); lunch at hotel en route; The R.H.S. Gardens at Wisley (afternoon).

On Saturday, May 9, whole day excursion. The garden of Dr. and Mrs. Fred Stoker at Loughton, Essex (morning); and the gardens of The Viscountess Byng of Vimy, Thorpe Hall, Thorpe-le-Soken (afternoon).

During the week May 11-18 a visit with lectures, etc., has been arranged by Dr. H. Roger-Smith to the Snowdon district.

Particulars of these excursions may be had from the Secretary, R.H.S., Vincent Square, London, S.W. 1.

*Report of the Conference.*

A full Report of the proceedings of the Conference will be published at an estimated price of 6s. a copy. Persons desiring a copy are asked to notify the Secretary of the R.H.S., Vincent Square, Westminster, London, S.W. 1.

CALENDAR.

May 5, 1 to 7.30 P.M., and May 6, 10 A.M. to 5 P.M.—Alpine Show in connexion with the Conference in the New Hall, and Fortnightly Meeting and Show in the Old Hall. A competition for the Sewell Medals will take place at the Alpine Show.

May 6, at 1.15 P.M.—Conference Luncheon in the Restaurant of the New Hall.

May 11.—British Floral Art Diploma. Written Examination.

May 19-22.—Chelsea Flower Show in the Royal Hospital Grounds, Chelsea. Full information as to arrangements may be found on p. lxxiii.

June 4, 1 to 7.30 P.M., and June 5, 10 A.M. to 5 P.M.—Iris Society's Show (see special notice below concerning Iris Group).

June 9, 1 to 7.30 P.M., and June 10, 10 A.M. to 5 P.M.—Fortnightly Meeting and Show. Competition for the Sewell Medals for Alpines.

At 3.30 on Tuesday afternoon, June 9, a lecture will be given by Mr. O. C. A. SLOCOCK on "Rhododendrons" in the Lecture Room of the New Hall.

At 4.30 on Tuesday afternoon, June 9, there will be a Lily Group Discussion on "Lilies in Japan" in the Restaurant of the Old Hall.

At 3.30 on Wednesday afternoon, June 10, there will be a debate, organized by the Institute of Landscape Architects, on "The Future of Gardening." All Fellows interested are invited to attend.

June 12.—Teachers' Advanced Practical Examination at Wisley.

June 15-19.—National Diploma in Horticulture. Preliminary Practical Examination at Wisley.

June 17-18.—British Floral Art Diploma. Practical Examination, R.H.S. Hall.

June 23, 1 to 7.30 P.M., and June 24, 10 A.M. to 5 P.M.—Fortnightly Meeting and Show of flowers in season in the New Hall. At this show the London and South of England Viola and Pansy Society will stage their annual display.

In the Old Hall the Cactus and Succulent Society will hold an exhibition.

At 3.30 on Tuesday afternoon, June 23, in the Lecture Room of the New Hall, Mr. E. MARKHAM will lecture on "Climbing Plants."

June 23.—Closing date for entries for the Amateurs' Flower Show.

June 23-26.—National Diploma in Horticulture. Final Practical Examination at Wisley.

June 30, 1 to 7 P.M.—Amateurs' Flower Show (special schedule on application). At this show there will be a special exhibit from Wisley of Garden Pests and Diseases.

At 4.30 P.M. on June 30 the Iris Group will meet in the Restaurant of the Old Hall (see special notice below).

#### ACTIVITIES IN THE SOCIETY'S HALLS.

On June 18, the second day of the British Floral Art Diploma Examination, Fellows are invited to come and inspect the candidates' work, which will be on view to the public from 2.30 P.M. to 5 P.M.

On Saturday, June 20, there will be a display given by the City of Westminster Scouts in the Old Hall. Any Fellows interested are asked to write to the organizer, Mr. S. H. TWINING, at 12 Southwick Street, W. 2, who will be pleased to send them full particulars.

#### IRIS GROUP.

By arrangement with the Iris Society it is now proposed to hold Iris Group meetings organized on the same lines as the popular Lily Group meetings. It is suggested that this year there should be two discussions on matters concerning the Iris.

The first meeting of the group will be on the first day of the Iris Show, June 4, at 5 o'clock in the Lecture Room of the New Hall. The subject for discussion is "Growing Irises," and it will be opened by Mr. AMOS PERRY and Mr. PILKINGTON.

The second meeting of the group will be on June 30 in the Restaurant of the Old Hall, when arrangements will be made for tea to be available at 4.30 P.M. and onwards at 1s. a head. The subject for discussion will be "Moisture-loving Irises," opened by Mr. C. W. CHRISTIE-MILLER and Mrs. MURRELL.

Fellows of the R.H.S. and members of the Iris Society are particularly invited to attend this group meeting, and the Secretary would be glad to register the names of any persons interested in the formation of such a group.

#### SMALL EXHIBITS.

At the Fortnightly Show on March 10 and 11 Mr. T. T. BARNARD of Wareham showed some exceptionally interesting Cape bulbs on the table provided for small exhibits from Fellows. The plants included *Geissorhiza excisa*, *Gladiolus viperatus*, *Hypoxis stellata*, and several colour forms of *Moraea villosa*. Mrs. RATCLIFF sent from her garden at Newton Park, Burton-on-Trent, attractive pans of alpine-house plants, including *Kabschia Saxifragae* and *Iris Danfordiae*, the dainty little yellow-flowered bulbous species named in honour of Mrs. DANFORD who found it growing on the Cilician Taurus.

Mr. J. E. H. STOOKE, who is well known as a raiser of hybrid lilies, sent to the Society's Meeting on March 24 and 25 a collection of Freesia seedlings of his own raising. Mr. J. HOWLETT showed some well-flowered sprays of *Acacia dealbata*, which evidently does well in his garden at Lymington, and a plant of the *Kalanchoe Blossfeldiana* (which was judged to be the best plant for the greenhouse shown to the Society in 1935) was staged by Mr. LOUIS CAHEN. Mr. C. R. SCRASE-DICKENS, V.M.H., who grows so many lime-bating plants to perfection at Coolhurst, Horsham, sent *Rhododendron Watsoni*.

It will be seen from the above that plants of particular interest are brought to the notice of Fellows by means of this table, and Fellows are invited to exhibit interesting or well-grown plants, flowers, fruits or vegetables. Any Fellow who desires to stage an exhibit consisting of not more than three pots, vases, or dishes may do so at any Fortnightly Meeting, although he has not applied for space beforehand. Such exhibits must be entered with the clerk at the Small Exhibits Table by noon on the morning of the meeting, and he will provide exhibitors' cards and stage the exhibits. Exhibitors are not permitted to place on this special table any notices or leaflets, nor may any orders be booked there. Exhibits staged under this regulation may be considered for Certificates of Cultural Commendation.

#### ADMISSION TO THE GARDENS AT WISLEY.

The gates will be open on week-days, including Bank Holidays (but Good Friday and Christmas Day excepted), from 10 A.M. to sunset, or to 7.30 P.M. (whichever is the earlier), on Sundays from the first Sunday in April to the last Sunday in September from 2 to 6 P.M., and on Sundays in October from 2 to 5 P.M.

Fellows of the Society, on showing their tickets, have free personal admission to the Gardens on all occasions when the gates are open.

Friends of Fellows will be admitted on presenting a Fellow's Transferable Ticket, which will admit three persons in all.

The public are admitted on week-days on payment of 2s. 6d. for adults, and 1s. for children under the age of 15 years; admission on Sundays is reserved for Fellows and their friends.

Children under the age of 15 years will not be admitted unless accompanied by an adult, who will be held responsible for their conduct while in the Gardens.

Members of affiliated Societies and of Horticultural and Scientific Institutions desirous of visiting the Gardens in parties will be afforded free admission on application to the Director of the Gardens by the responsible authority. Applications for such visits should be made at least 14 days in advance.

All other bodies desirous of visiting the Gardens in parties should apply to the Secretary of the Royal Horticultural Society, stating the number of the party and date of anticipated visit. Such parties will be required to pay 1s. a head, with a minimum of 10s., and must purchase tickets in advance.

No dogs or perambulators will be admitted. Parcels, baskets, etc., must be left at the gate.

#### WISLEY IN MAY.

May is undoubtedly the most showy month of the year, and much of interest is to be seen in all departments of the Gardens.

The enthusiast in Alpines will find the house devoted to these plants to contain many interesting plants at their best, including species of *Primula*, *Lewisia* and *Ramondia*.

Near by is the trial of *Aubrietias* in many shades of purple and violet in full flower, while the collection of *Helianthemums* and *Cistuses* is to be found here.

In the Rock Garden there is also much of interest and attraction, such as *Daphne Cneorum*, *Phlox subulata* and *P. mesoleuca*, *Lewisia*, *Geranium* and *Primula* species, *Meconopsis*, as well as small *Rhododendrons* of the *Lapponicum* series.

The Wild Garden is now at its best with *Camellias*, *Rhododendrons*—though the last are not flowering as freely as usual owing to the damage done by the late May frosts of last year, followed by a very dry summer—*Trilliums*, growing amid many *Primulas*, including *Primula japonica*, *P. helodoxa* and *P. pulverulenta*, *Azaleas*, and *Cornus florida* and its variety *rubra*. Many *Lilies* will now be growing rapidly in this part of the Garden, which seems eminently suitable for this genus.

Although the trial of *Daffodils* in Seven Acres will mostly be past, there may be expected still a few of the *Poeticus* section flowering. The Heather Garden is usually interesting, but perhaps *Erica australis* and *E. arborea* and its variety *alpina* will be most noticeable. Several examples of *Cytisus* and other Leguminous

shrubs and Genista are to be found here associated with the Ericas and Callunas. Many flowering trees and shrubs are at their best. Japanese Cherries in many varieties give a fairy-like appearance to some of the walks, while many species and hybrids of the Crab Apples in shades of white and pink and coloured foliage are assembled with Spiraeas, Cydonias and Berberis, and many Lilacs add to the display. To find the collection of the Lilacs the visitor must walk through the Pinetum to what is known as Howard's Field, where all that is best in Lilacs may be found.

The trial grounds and standard collections of plants near the entrance gate contain the outstanding varieties of Lupins, Heucheras, Irises, Wallflowers, Cornflowers and other popular florists' flowers. Here may be found many of the latest and best varieties of these genera, and an inspection of these trials is at all times of interest to those intending to secure the best varieties.

The Greenhouses will also repay a visit. Here two houses are this year devoted to a comprehensive trial of *Schizanthus* in varied colours and habit, ranging from a foot or so to 3 feet in height. Fuchsias will also be in bloom now.

In the greenhouse devoted to tender hard-wooded plants there may always be found flowering shrubs and climbers, and in the half-hardy plant house are many bulbous plants, from different regions, which it is impossible to cultivate successfully out of doors, natives of the Mediterranean Region and S. Africa.

#### HORTICULTURAL COLOUR CHART.

Fellows' attention is drawn to the Horticultural Colour Chart Circular enclosed with this issue of the JOURNAL. It is essential that some idea of the edition required should be ascertained, and for this reason a preliminary application form is attached to the circular. It is hoped that there will be a good response from Fellows, so that the price may be made as low as possible, and the usefulness of the colour chart may be increased by its greater circulation.

It is expected that the chart will be available either towards the end of this year, or in the spring of 1937.

#### INSPECTION OF GARDENS.

Many Fellows may not be aware of the terms under which their Gardens can be inspected by the Society's Garden Inspector, and advice given thereon. They are set out below, and it will be seen that special arrangements can be made when Fellows living in the same district co-operate.

"The inspection of Gardens belonging to Fellows is conducted by a thoroughly competent Inspector from the Society, who reports and advises at the following cost, viz.: a fee of £3 3s. for one day (or £5 5s. for two consecutive days), together with all out-of-pocket expenses. No inspection may occupy more than two days, save by special arrangement. Should two or more Fellows residing in the same district, with their Gardens within easy reach of one another, desire to have the services of the Garden Inspector, arrangements will be made for such a combined inspection and the fee and expenses divided by consent of those concerned. Fellows wishing for the services of an Inspector are requested to give at least a week's notice and choice of two or three days, and to indicate the most convenient railway station and its distance from their Garden. Gardens can only be inspected at the *written* request of the *owner*."

#### EUROPEAN HERBARIUM ON VIEW.

As reported in the March number, the European Herbarium presented to the Horticultural Club by Mr. F. J. HANBURY is now located in the Club Room on the second floor of the R.H.S. New Hall, and the keys are available at the Society's Offices for those who desire to inspect the Herbarium. It would be a convenience if Fellows who desire to see the Herbarium would give notice to the Society beforehand.

#### WHITE FLY PARASITE.

Where the parasite of the greenhouse white fly, *Encarsia formosa*, has been introduced it has proved extremely effective in checking the increase of this pest under glass and large numbers have been distributed during the past few years. The demand has become so great that, in order to meet in a measure the cost of maintaining the parasite over the difficult winter months and packing and despatching it, the Council has fixed a charge of 2s. 6d. for a supply for a small house and 5s. for a large house, and applications for it should be accompanied by

**FLORAL COMMITTEE A.**—Mr. G. W. LEAK, V.M.H., in the Chair, and fourteen other members present.

**Awards Recommended :—**

*Silver-gilt Banksian Medal.*

To Messrs. Allwood, Haywards Heath, for Carnations.

*Silver Banksian Medal.*

To Ashington Nurseries, Ashington, for Carnations.

To Messrs. Bath, Wisbech, for Daffodils, Tulips, Hyacinths, Crocuses.

To Mr. G. H. Dalrymple, Bartley, for Freesias.

To Messrs. S. Low, Enfield, for Carnations and other greenhouse plants.

To Messrs. Prins, Wisbech, for Daffodils, Tulips, Hyacinths, Crocuses.

*Flora Medal.*

To Messrs. Blom, Cranleigh, for Hyacinths.

To Messrs. Engelmann, Saffron Walden, for Carnations, Echeverias, Pansies.

To Messrs. Napier, Taunton, for Carnations.

To Messrs. Wakeley, London, for Daffodils, Crocuses.

*Banksian Medal.*

To Misses Allen-Brown, Henfield, for Violets.

To Messrs. Toogood, Southampton, for Primulas.

The following award was recommended after trial at Wisley :

*Award of Merit.*

To Cineraria ' Superb Large Flowered Single,' from Messrs. Sutton, Reading,  
See p. 222.

*Selected for trial at Wisley.*

Freesia ' Caro Carlée '

Freesia ' Enchantress '

Freesia ' Geertruida Carlée '

Freesia ' George Washington '

Freesia ' Good Luck '

Freesia ' Yellow Surprise '

} from Messrs. G. C. van Meeuwen, Heemstede,  
Holland.

**Other Exhibits.**

Messrs. Clarke, Dover : Primroses and shrubs.

Messrs. van Meeuwen, Heemstede : Freesia ' Yellow Bird.'

**FLORAL COMMITTEE B.**—Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and twenty-four other members present.

**Awards Recommended :—**

*Silver-gilt Banksian Medal.*

To Messrs. Elliott, Stevenage, for alpine and bulbous plants.

*Silver Flora Medal.*

To Messrs. Casburn, Bedford & Page, Cambridge, for Saxifrages and other alpine plants.

To Messrs. Hillier, Winchester, for flowering shrubs.

To Messrs. Russell, Richmond, for flowering shrubs.

To Messrs. Waterer, Bagshot, for flowering shrubs.

*Silver Banksian Medal.*

To Brookside Nurseries, Oxford, for Saxifrages.

To Messrs. Cheal, Crawley, for flowering shrubs.

To Hocker Edge Gardens, Cranbrook, for bulbous plants.

To Messrs. Neale, Worthing, for succulents.

To Messrs. Prichard, Christchurch, for alpine and bulbous plants.

To Mr. Geo. Welch, Cambridge, for Saxifrages and other alpine plants.

To Messrs. Wm. Wood, Taplow, for flowering shrubs.

*Flora Medal.*

To Messrs. Barr, Taplow, for Narcissi and other bulbous plants.

To Messrs. Stewart, Ferndown, for Azaleas and bulbous plants.

To Walton Park Nurseries, Walton, for flowering shrubs.

To Messrs. Waterer, Sons & Crisp, Twyford, for alpine plants.

*Banksian Medal.*

To Alpine Nurseries, Ltd., West Moors, for alpine and bulbous plants.

To Messrs. Baker, Codsall, for alpine and bulbous plants.

To Messrs. Cheal, Crawley, for bulbous plants.

To Messrs. Cuthbert, Cranleigh, for Azaleas.

To Dartington Hall, Ltd., Totnes, for alpine plants.

To Mr. J. J. Klinkert, Richmond, for clipped Box trees.

To Messrs. Redgrove & Patrick, Sevenoaks, for alpine plants.



*Award of Merit.*

To *Iris reticulata* 'Royal Blue' as a hardy flowering plant (votes 14 for), from Miss A. L. Hutley, Maldon. See p. 223.

To *Primula Allioni* var. *superba* as a flowering plant for the alpine house (votes 18 for), from Frank Barker, Esq., Stevenage. See p. 223.

*Preliminary Commendation.*

To *Homeria elegans* as a flowering plant for the cool greenhouse (votes 9 for), from T. T. Barnard, Esq., Wareham.

To *Homeria elegans*, yellow variety, as a flowering plant for the cool greenhouse (votes unanimous), from T. T. Barnard, Esq.

**Other Exhibits.**

T. T. Barnard, Esq., Wareham: *Homeria maculata*, *Gladiolus carinatus* var. 'Mrs. Schomberg Byng.'

Chez Nous Nurseries, Newick: alpine plants.

Mr. A. Corderoy, Eltham: alpine plants.

W. Balfour Gourlay, Esq., Cambridge: *Crocus vitellinus* var. *graveolens*.

Lt.-Col. C. H. Grey, Cranbrook: *Synnotia Metelerkampiae*.

Capt. H. G. Hawker, Ermington: *Acacia pycnantha*.

Miss Hopkins, Coulsdon: hardy plants.

Mr. W. E. T. Ingwersen, East Grinstead: Saxifrages.

Sir Stephenson Kent, K.C.B., Nutley: *Primula marginata* 'Chapelwood.'

Mr. L. Lawrence, Taplow: succulents.

Marsden Nursery, Ashted: hardy plants.

Messrs. Maxwell & Beale, Broadstone: alpine plants.

Lt.-Col. L. C. R. Messel, O.B.E., Handcross: *Daphne odora*.

Messrs. Prichard, Christchurch: Saxifraga 'The Duke.'

L. de Rothschild, Esq., Exbury: *Camellia saluenensis*.

Lt.-Col. Rt. Hon. H. H. Spender-Clay, C.M.G., Lingfield: Camellia.

Waterperry House Horticultural School, Oxford: Saxifrages.

Mr. G. E. Welch, Cambridge: Saxifraga 'Myra,' Cambridga variety.

Mr. R. Colpoys Wood, West Drayton: evergreen shrubs.

**ORCHID COMMITTEE.**—Sir JEREMIAH COLMAN, Bt., in the Chair, and sixteen other members present.

**Awards Recommended:—***Gold Medal.*

To Messrs. Charlesworth, Haywards Heath, for *Odontiodas*.

To Messrs. H. G. Alexander, Tetbury, for *Cymbidiums*.

*Silver-gilt Banksian Medal.*

To Messrs. McBean, Cooksbridge, for *Cymbidiums*.

To Messrs. Sanders, St. Albans, for a group.

To G. P. Harben, Esq., Kings Somborne, Hants, for a group.

*Silver Banksian Medal.*

To Messrs. Armstrong & Brown, Tunbridge Wells, for a group.

*Award of Merit.*

To *Cymbidium* × 'Chiron' var. 'Olive' ('Bustard' × 'President Wilson'), (votes 12 for, 4 against), from the Hon. Mrs. H. S. Tufton, Englefield Green, Surrey. See p. 222.

To *Cymbidium* × 'Dorchester,' Castle Hill var. (*Alexanderi* × 'Tityus') (votes unanimous), from the Hon. Mrs. H. S. Tufton. See p. 222.

To *Cymbidium* × 'Janet' (*Alexanderi* × 'Dorothy') (votes 14 for), from Baron Bruno Schröder, Englefield Green, Surrey. See p. 222.

To *Cymbidium* × 'Susette' var. 'Rosy Morn' (*insigne* × 'Magali Sander') (votes 15 for), from Messrs. McBean, Cooksbridge. See p. 222.

*Cultural Commendation.*

To Mr. B. P. Dunster, Orchid grower to E. R. Ashton, Esq., Tunbridge Wells, for *Phaius* × *Marthiae*, bearing seven many-flowered spikes.

**Other Exhibits.**

Messrs. Stuart Low, Jarvis Brook: a group.

Messrs. Harry Dixon, Wandsworth: a group.

**JOINT RHODODENDRON COMMITTEE.**—Mr. J. B. STEVENSON in the Chair, and seven other members present.

**Exhibits.**

Captain A. M. Talbot Fletcher, Margam Castle, Port Talbot, S. Wales: *R. heptamerum*.

E. J. P. Magor, Esq., Lamellen, St. Tudy, Cornwall: *R. × sutchbarb* and *R. × orbicarb*.

Lady Brodie Henderson, Braughing, Herts.: *R. oreodora*.

**NARCISSUS AND TULIP COMMITTEE.**—Mr. E. A. BOWLES, F.L.S., V.M.H., in the Chair, and fifteen other members present.

**Awards Recommended :—**

*Silver-gilt Banksian Medal.*

To Mr. R. F. Calvert, Coverack, Cornwall, for Daffodils.

*Silver Flora Medal.*

To Messrs. Carters' Tested Seeds, Raynes Park, for Daffodils in bowls.

*Silver Banksian Medal.*

To Messrs. J. R. Pearson, Lowdham, for Daffodils in bowls.

*Award of Merit.*

To *Narcissus* 'Winter Gold' as a variety for cutting from the open for market, after trial at Gulval (voting unanimous), shown and sent for trial by Messrs. Barr, 12 King Street, Covent Garden.

**Daffodil Selected for Trial.**

*Narcissus* 'Golden Harbinger,' shown by Messrs. Barr, was selected for trial at Kirton.

**Other Exhibits.**

The glaucous-leaved form of *Narcissus juncifolius*, called *calciicola*, was shown by Mr. R. F. Calvert.

Daffodils, sent by R. D. Trotter, Esq., Leith Vale, Ockley, for naming, were identified as *Narcissus asturiensis* (syn. *minimus*), a hybrid between *N. cyclamineus* and *N. asturiensis*; *N. pumilus* (syn. *nanus*); and an unnamed seedling, probably a hybrid of *N. pallidus praecox*.

MARCH 24, 1936.

Mr. H. R. DARLINGTON, M.A., in the Chair.

A lecture was given by Mr. CHARLES H. RIGG, F.R.H.S., on "Growing Roses under Glass." See p. 209.

**SCIENTIFIC COMMITTEE.**—Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and eight other members present.

*Romulea* sp.—A letter was received from Professor BARNARD regarding the *Romulea* sp. shown on January 14, 1936, saying that it had proved to be new and was not yet named. The Award of the Certificate is therefore suspended for the present.

*Auxenes and root growth.*—Dr. TINCKER remarked that he had recently been experimenting on the use of certain chemical substances which are believed to stimulate plant growth and which are known by the general name of auxenes. He found that the painting of the uninjured stem, whether corky or not, with some of these substances induced in certain plants the rapid production of roots. The experiments are being continued.

*Echeveria and Dudleya.*—Mr. E. G. BAKER drew attention to the treatment of *Echeveria* and *Dudleya* in the recently published part of the Flora of California where the genus *Dudleya* is sunk under *Echeveria*.

*Berberis Comberi.*—This rare species was shown by Lady LAWRENCE from her garden. It is a Chilean species distinct in having the floral parts in fives instead of sixes. It has proved very difficult to propagate so far.

**FRUIT AND VEGETABLE COMMITTEE.**—Mr. E. A. BUNYARD, F.L.S., in the Chair, and twenty-two other members present.

**Exhibit.**

Mr. W. C. Modral, Old Warden Park, Biggleswade: Apple, 'Newton Wonder.'

**FLORAL COMMITTEE A.**—Mr. J. M. BRIDGEFORD in the Chair, and eighteen other members present.

**Awards Recommended :—**

*Silver Flora Medal.*

To Messrs. Allwood, Haywards Heath, for Carnations.

*Silver Banksian Medal.*

To Ashington Nurseries, Ashington, for Carnations.

To Mr. G. H. Dalrymple, Bartley, for Freesias.

To Messrs. Napier, Taunton, for Carnations.

To Messrs. Wakeley, London, for Hyacinths.

*Banksian Medal.*

- To Army Vocational Training Centre, Chisleton, for Cinerarias.
- To Messrs. Blackmore & Langdon, Bath, for Polyanthus and Blue Primroses.
- To Messrs. Engelmann, Saffron Walden, for Carnations, Pansies, Gerberas.
- To Messrs. S. Low, Enfield, for Carnations.

**Other Exhibits.**

- Miss F. E. Briggs, Plymouth : *Anemone fulgens*, Persephone strain.
- Messrs. Bunn, Malvern : Pelargonium 'Bunn's Triumph.'
- Messrs. Clark, Dover : Primroses.
- Messrs. Sutton, Reading : *Primula malacoides*.

**FLORAL COMMITTEE B.**—Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and twenty-two other members present.

**Awards Recommended :—***Gold Medal.*

- To Messrs. Waterer, Bagshot, for a collection of Japanese Cherries.

*Silver-gilt Banksian Medal.*

- To Messrs. Elliott, Stevenage, for alpine and bulbous plants.

*Silver Flora Medal.*

- To Messrs. Hillier, Winchester, for flowering trees and shrubs.

*Silver Banksian Medal.*

- To Messrs. Casburn, Bedford & Page, Cambridge, for alpine and bulbous plants.
- To Messrs. Cheal, Crawley, for flowering trees and shrubs.
- To Captain Coode, Truro, for a large group of cut branches of *Magnolia Campbellii*.

- To Hocker Edge Gardens, Cranbrook, for bulbous and alpine plants.

- To Messrs. Stuart Low, Enfield, for greenhouse shrubs and plants.

- To Messrs. Prichard, Christchurch, for alpine and bulbous plants.

*Flora Medal.*

- To Messrs. Barr, Taplow, for bulbous plants.
- To Brookside Nurseries, Oxford, for alpine plants.
- To Messrs. Gill, Falmouth, for Rhododendrons and Camellias.
- To Mr. E. Ladhams, Elstead, for alpine plants.
- To Messrs. Russell, Richmond, for flowering trees and shrubs.
- To Messrs. Waterer, Twyford, for alpine and bulbous plants.
- To Mr. G. E. Welch, Cambridge, for alpine plants.

*Banksian Medal.*

- To Alpine Nurseries, West Moors, for alpine and bulbous plants.
- To Mr. E. Ballard, Colwall, for Hellebores and alpine plants.
- To Messrs. Baker, Codsall, for alpine plants.
- To Messrs. Cuthbert, Cranleigh, for Azaleas and Brooms.
- To Marsden Nurseries, Ashted, for Tulips and alpine plants.
- To Mr. G. G. Whitelegg, Chislehurst, for alpine plants and shrubs.

*Lindley Medal.*

- To T. T. Barnard, Esq., Wareham, for a collection of Cape bulbous plants.

*Award of Merit.*

- To *Anemone Pulsatilla*, Budapest var. as a hardy flowering plant (votes unanimous), from Guy Fenwick, Esq., North Luffenham. See p. 222.

- To *Camellia* 'Salutation' as a hardy flowering shrub (votes unanimous), from Lt.-Col. Stephenson R. Clarke, C.B., Haywards Heath. See p. 222.

- To *Ornithogalum aureum* as a flowering plant for the cool greenhouse (votes unanimous), from Lt.-Col. C. H. Grey, D.S.O., Cranbrook. See p. 223.

- To *Primula scapigera* as a hardy flowering plant (votes unanimous), from Mr. W. Wells, jun., Merstham. See p. 223.

- To *Streptocarpus caulescens* as a flowering plant for the warm greenhouse (votes 15 for), from Lionel de Rothschild, Esq., Exbury. See p. 224. This award was recommended on March 10, 1936, and confirmed, after verification of name, on March 24, 1936.

*Preliminary Commendation.*

- To *Abeliophyllum distichum* (votes unanimous), from Lord Aberconway, Bodnant. A small, deciduous, Korean shrub related to Forsythia, with small, white, fragrant flowers in short racemes produced from the previous season's growths.

- To *Primula Clarkei* (votes unanimous), from Lord Aberconway.

- To *Prunus Persica alba pendula* (votes unanimous), from Messrs. Russell, Richmond.

**Other Exhibits.**

- Viscount Allendale, Wakefield : Camellias.  
 Miss Briggs, Plymouth : *Grevillea* × *semperflorens* (*G. sulphurea* × *G. rosmarinifolia*).  
 Messrs. Burkwood & Skipwith, Kingston : flowering shrubs.  
 Chez Nous Nurseries, Newick : alpine plants.  
 Mr. A. Corderoy, Eltham : alpine plants.  
 Dean Nurseries, Bournemouth : alpine plants.  
 Messrs. Elliott, Stevenage : *Primula* × *rheiniana*.  
 Miss Hopkins, Coulsdon : hardy plants.  
 The Director, R. B. G., Kew : *Forsythia ovata*.  
 Mr. J. J. Klinkert, Richmond : clipped Box trees.  
 Lady Lawrence, Dorking : *Berberis Comberi*.  
 Messrs. Stuart Low, Enfield : *Boronia serrulata*, *Camellia* 'Beauty of Bush Hill.'  
 Messrs. Maxwell & Beale, Broadstone : alpine and bulbous plants.  
 Messrs. Redgrove & Patrick, Sevenoaks : alpine plants and shrubs.  
 Mr. J. Robinson, Eltham : alpine plants.  
 Messrs. Rogers, Southampton : alpine plants.  
 Lionel de Rothschild, Esq., Exbury : *Camellia Pitardii*, *C. reticulata*.  
 C. R. Scrase-Dickins, Esq., Horsham : *Rhododendron repens* × *R. neriflorum*.  
 Hon. Mrs. Sebag-Montefiore, Plymouth : *Aucuba japonica* var.  
 Messrs. Stewart, Ferndown : Azaleas and alpine plants.  
 Waterperry School of Horticulture, Oxford : alpine plants.  
 Mr. R. C. Wood, West Drayton : evergreen shrubs.

**ORCHID COMMITTEE.**—Sir JEREMIAH COLMAN, Bt., in the Chair, and twelve other members present.

**Awards Recommended :—**

*Silver Banksian Medal.*

- To Messrs. Charlesworth, Haywards Heath, for a group.  
 To Messrs. Sanders, St. Albans, for a group.  
 To Messrs. Armstrong & Brown, Tunbridge Wells, for a group.  
 To Messrs. McBean, Cooksbridge, for a group.

*Banksian Medal.*

- To Messrs. Stuart Low, Jarvis Brook, for a group.

**NARCISSUS AND TULIP COMMITTEE.**—Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and twenty other members present.

**Awards Recommended :—**

*Silver-gilt Flora Medal.*

- To Mr. R. F. Calvert, Coverack, Cornwall, for Daffodils.

*Silver-gilt Banksian Medal.*

- To Messrs. Dobbie, Edinburgh, for Tulips.  
 To Messrs. Barr, Covent Garden, for Daffodils.

*Silver Flora Medal.*

- To Mr. J. L. Richardson, Prospect House, Waterford, for Daffodils.

*Silver Banksian Medal.*

- To Messrs. R. H. Bath, Wisbech, for Tulips.  
 To Messrs. Walter Blom, Four Acres, Cranleigh, for Tulips.

*Flora Medal.*

- To Mr. Guy L. Wilson, Broughshane, Co. Antrim, for Daffodils.

*Banksian Medal.*

- To Messrs. D. Stewart, Ferndown Nurseries, nr. Wimborne, for Daffodils.  
 To the Donard Nursery Co., Newcastle, Co. Down, for Daffodils.

*Award of Merit.*

For cutting from the open for market, after trial at Gulval.

- To *Narcissus* 'Pentewan,' sent by Mr. P. D. Williams, St. Keverne.  
 To *Narcissus* 'Bonython,' sent by Mr. P. D. Williams, St. Keverne.  
 To *Narcissus* 'White Nile,' sent by Messrs. Barr, 12 King Street, Covent Garden.  
 To *Narcissus* 'St. Mabyn,' sent by Mr. J. Chapple, Chiverton, St. Buryan, Penzance.

**JOINT RHODODENDRON COMMITTEE.**—Mr. J. B. STEVENSON in the Chair, and thirteen other members present.

**Awards Recommended :—**

*First-class Certificate.*

To *R. Delavayi* (votes 12 for, 1 against), from Captain A. M. Talbot Fletcher, Margam Castle, Port Talbot, S. Wales. See p. 223.

*Award of Merit.*

To *R.* × 'Duke of Cornwall' var. 'Trelawny' (votes 10 for, 1 against), from Messrs. Gill, The Nurseries, Penryn and Falmouth. See p. 223.

**Other Exhibits.**

E. J. P. Magor, Esq., St. Tudy, Cornwall: *R.* × *cilaspis*, *R. lukiangense*.

Captain A. M. Talbot Fletcher, Margam Castle, Port Talbot, S. Wales: *R. heptamerum*.

Lord Aberconway, Bodnant, N. Wales: *R.* × 'Ladybird.'

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(To be continued.)



# EXTRACTS FROM THE PROCEEDINGS

## OF THE

### ROYAL HORTICULTURAL SOCIETY.

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#### NOTICES TO FELLOWS.

##### CONFERENCE ON ALPINE PLANTS.

The Conference on Alpine Plants which was held in the Society's Lecture Room on May 5, 6 and 7 proved to be a very popular one, and was well attended by both professional and amateur growers of rock plants.

At the meeting on Tuesday afternoon, May 5, the Conference was opened by Lord ABERCONWAY, who was in the Chair, supported by the Viscountess BYNG OF VIMY, the President of the Alpine Garden Society. At this session three papers came up for discussion: the first, "Rock Gardening of Different Periods in Different Countries," by Lady ROCKLEY; the second, "Rock Gardening in the Province of Quebec," by Mr. CLEVELAND MORGAN; and the third, "The Rise of Modern Rock Gardening and its Future," by Mr. R. W. WALLACE. All these subjects were illustrated by lantern slides. It was very much regretted that Lady ROCKLEY was prevented by illness from being present, but she very kindly sent her notes for the Conference, which were read by Mr. CHITTENDEN.

At the morning session on Wednesday, when the Chair was taken by Dr. H. ROGER-SMITH, the two subjects discussed were "Utilization of Natural Slopes," by Mr. GEORGE DILLISTONE, and "Utilization of Flat Sites," by Mr. W. E. Th. INGWERSEN. Mr. DILLISTONE was unfortunately too ill to be present, but Mr. H. COWLEY kindly deputized for him.

In the afternoon, under the Chairmanship of Mr. E. A. BOWLES, the question of cultivation was discussed. Mr. R. E. COOPER spoke of his experiences in the cultivation of rock plants generally, and Mr. C. T. MUSGRAVE dealt more particularly with plants which are found to be difficult to grow.

On Thursday morning, when Lady BYNG took the Chair, the subject under discussion was "Rock Gardening in Sunny Countries." Miss STANFORD spoke of her experiences in South Africa, and Mr. HERTRICH gave an interesting description of rock gardens in Southern California. Both papers were well illustrated.

On Thursday afternoon, with Dr. FRED STOKER in the Chair, the Alpine House came under discussion when Mr. P. ROSENHEIM dealt with the subject of "The Alpine House and its Management." And finally, Mr. MAURICE PRICHARD spoke on the propagation of Alpine Plants.

The Show which was held in the New Hall on the first two days of the Conference was very well attended, and the classes for amateurs were well filled. The trade exhibits were particularly good, and the Hall was furnished with some very fine rock gardens. The total number of visitors on this occasion exceeded 8,000 persons.

The excursions which were arranged to visit Kew and Wisley, and the gardens of Dr. F. STOKER and the Viscountess BYNG OF VIMY, were booked up, and the Society is exceedingly grateful for the hospitality offered by the owners of the places visited.

Much useful information was gleaned by those present at the Conference, and the Report of the proceedings, which is to be published at a price of approximately 6s., should prove to be a very helpful one. Anyone who would like a copy of this volume to be reserved is asked to write to the Secretary.

# AMATEURS' FLOWER SHOW.

The month of June offers many opportunities to the amateur gardener to submit the results of his labours either for exhibition purposes or to the various Committees which sit on every Show day. The Calendar of Shows for this month includes the Iris Society's Show, the London and South of England Viola and Pansy Society's Show, the Cactus and Succulent Society's Show, and the Royal Horticultural Society's Amateurs' Flower Show, as well as the ordinary Fortnightly Shows.

The Amateurs' Show, which is the eleventh consecutive Show of this nature which the Society has staged, is to be held on June 30, when it will be open from 1 to 7 P.M. Anyone who contemplates entering flowers or plants for this Show should apply to the Secretary for a special schedule: the closing date for entries is June 23. Among other things there will be a special exhibit from the Society's Gardens at Wisley on "Pests and Diseases," and representatives of the Society's Staff will be at hand to assist visitors in solving any problems of cultivation and disease which may be troubling them.

## CALENDAR.

June 4, 1-7.30 P.M., and June 5, 10 A.M. to 5 P.M.—Iris Society's Show.

At 5 P.M. in the Lecture Room of the New Hall, on June 4, the Iris Group will meet to discuss "Growing Irises." (See special notice, p. xci.)

June 9, 1 to 7.30 P.M., and June 10, 10 A.M. to 5 P.M.—Fortnightly Meeting and Show. Competition for the Sewell Medals for Alpines.

At 3.30 P.M. on Tuesday, June 9, there will be a lecture by Mr. O. C. A. SLOCOCK on "Rhododendrons" in the Lecture Room of the New Hall.

At 4.30 P.M. on Tuesday, June 9, there will be a Lily Group Discussion on "Lilies in Japan" in the Restaurant of the Old Hall.

At 3.30 P.M. on Wednesday, June 10, there will be a debate organized by the Institute of Landscape Architects on "The Future of Gardening." All Fellows interested are invited to attend.

June 12.—Teachers' Advanced Practical Examination at Wisley.

June 15 to 19.—National Diploma in Horticulture. Preliminary Practical Examination at Wisley.

June 17 to 18.—British Floral Art Diploma. Practical Examination.

June 23, 1 to 7.30 P.M., and June 24, 10 A.M. to 5 P.M.—Fortnightly Meeting and Show of Flowers in Season in the New Hall. At this Show the London and South of England Viola and Pansy Society will stage their annual display.

In the Old Hall the Cactus and Succulent Society will hold an exhibition.

At 3.30 P.M. on Tuesday, June 23, in the Lecture Room of the New Hall, Mr. E. MARKHAM will lecture on "Climbing Plants."

June 23.—Closing date for entries for the Amateurs' Flower Show.

June 23 to 26.—National Diploma in Horticulture. Final Practical Examination at Wisley.

June 30, 1 to 7 P.M.—Amateurs' Flower Show (special schedule on application). At this Show there will be a special exhibit from Wisley entitled "Pests and Diseases." (See special notice above.)

At 4.30 P.M. on June 30 the Iris Group will meet in the Restaurant of the Old Hall (see special notice, p. xci).

July 2, 1 to 7.30 P.M., British Delphinium Society's Show in the New Hall, and the National Sweet Pea Society's Show in the Old Hall.

July 4, The Lily Group visits the gardens of Lord SWAYTHLING, Townhill Park, and Professor E. S. LYTTEL, Nyewoods, Chilworth. Full particulars are available from the Secretary on application.

July 7, 1 to 7.30 P.M., and July 8, 10 A.M. to 5 P.M.—Fortnightly Show of Lilies and flowers in season. On this occasion there will be a competition for the best hybrid Lily, which will be continued at the Show on July 21.

At 3.30 P.M. on Tuesday, July 7, there will be a Lily Group Discussion in the Lecture Room of the New Hall on "Lilies Exhibited."

At 7 P.M., in the Restaurant of the New Hall, the Lily Group Dinner will be held, followed by a discussion on "Lily Hybrids I should like to raise."

July 14, 1 to 7.30 P.M., and July 15, 10 A.M. to 5 P.M.—National Carnation and Picotee Society's Show in the Old Hall. In the New Hall on July 14 the Horticultural Society of the Ministry of Agriculture and Fisheries will stage their annual Show. The hours of opening will be 12 noon to 7 P.M. Fellows' tickets admit free to this Show.

July 21, 1 to 7.30 P.M., and July 22, 10 A.M. to 5 P.M.—Fortnightly Meeting and Show. The competition for the best hybrid Lily, which was commenced

at the Show on July 7, will be continued. Also on this occasion there will be a competition for the Clay Cup which is awarded for scented Roses (see special notice below).

At 3.30 P.M. on Tuesday, July 21, in the Lecture Room of the New Hall, there will be a lecture by Miss E. W. JAMESON on "The Preservation of Vegetables for Home Use."

On July 22 and 23, from 2 to 4 P.M., there will be a practical demonstration at Wisley (weather permitting) on the summer pruning of fruit trees and shrubs (see special notice, p. xcii).

July 24, 2.30 to 9 P.M., and July 25, 10 A.M. to 6 P.M.—London Gardens Society's Exhibition of Flowers, in the Old Hall.

#### ACTIVITIES IN THE SOCIETY'S HALLS.

On June 17 and 18 the British Floral Art Diploma Examination will be held in the New Hall, and for those interested in the work done for these examinations, the Hall will be open between the hours of 2.30 and 5 P.M. on June 18.

On Saturday, June 20, there will be a display given by the City of Westminster Scouts in the Old Hall. Fellows interested are asked to write to the organizer, Mr. S. H. TWINING, at 12 Southwick Street, W. 2, who will be pleased to send them full particulars.

#### LECTURE ON SUCCULENT PLANTS.

The Cactus and Succulent Society of Great Britain have arranged a lecture on July 21 at 6 P.M., in the Lecture Room of the New Hall on "Succulent Plants," to be given by Herr JACOBSEN, the Curator of the Botanic Gardens at Kiel. The lecture will be illustrated by lantern slides. Fellows who are interested in Succulents are invited to attend the lecture.

#### IRIS GROUP.

By arrangement with the Iris Society it is now proposed to hold Iris Group meetings organized on the same lines as the popular Lily Group meetings. It is suggested that this year there should be two discussions on matters concerning the Iris.

The first meeting of the group will be on the first day of the Iris Show, June 4, at 5 o'clock in the Lecture Room of the New Hall. The subject for discussion will be "Growing Irises," and it will be opened by Mr. AMOS PERRY and Mr. PILKINGTON.

The second meeting of the group will be on June 30 in the Restaurant of the Old Hall, when arrangements will be made for tea to be available at 4.30 P.M. and onwards at 1s. a head. The subject for discussion will be "Moisture-loving Irises," opened by Mr. C. W. CHRISTIE-MILLER and Mrs. MURRELL.

Fellows of the R.H.S. and members of the Iris Society are invited to attend this group meeting, and the Secretary would be glad to register the names of any persons interested in the formation of such a group.

#### COMPETITION FOR THE CLAY CUP FOR ROSES.

At the Show on July 21 (see Calendar) the annual competition for the Clay Challenge Cup for Roses will take place. This Cup, which was presented by Messrs. Clay in 1913, is offered to the raiser of a Rose of good form and colour, not in commerce before the current year, and possessing the true old-rose scent, such as may be found in the old Cabbage or Provence Rose, in 'General Jacqueminot,' 'Marie Baumann,' 'Duke of Wellington,' 'General McArthur,' etc. The scent known as "tea rose" is not, for the purposes of this competition, to be counted the true old-rose scent. Not more than three different varieties may be shown by one competitor. At least three and not more than six blooms or trusses of each variety will be required, together with a plant in flower and bud. The Cup will be awarded only once for the same Rose. Entries should be received not later than by the first post on Wednesday, July 15, on special forms which are obtainable from the Secretary.

#### SEWELL MEDAL COMPETITION.

The Fortnightly Show on June 9 is the occasion for the competition for the last Sewell Medal to be awarded this year. This Medal, which is struck in gold, is offered for an amateur exhibit of plants suitable for the rock garden or alpine house, consisting of six pots or pans not exceeding 12 inches in diameter. Only one subject may be shown in each pot or pan, but it is not necessary that the

plants should have been grown in the receptacles in which they are shown and if desired plants may be lifted and potted for the purposes of the competition. Not fewer than four plants in each exhibit must be in bloom, and plants which are not in bloom should possess decorative value when shown. The scale of points for judging will be as follows: Suitability, 24 points; Rarity, 18 points; Cultivation, 24 points. Entries for the medals offered at the Show on June 9 should be made on special forms which are obtainable from the Secretary, who should receive them by the first post on Wednesday, June 3.

#### PRACTICAL DEMONSTRATIONS AT WISLEY.

On July 22 and 23 the demonstrations to take place this year will be held at the Gardens at Wisley. The subject is "The Summer Pruning of Fruit Trees and Shrubs." Fellows intending to be present on either of these days should notify the Director, R.H.S. Gardens, Wisley, Ripley, Surrey, beforehand, so that adequate arrangements can be made. (See also Calendar.)

#### FORMATION OF JOINT ROCK GARDEN PLANT COMMITTEE.

A Joint Rock Garden Plant Committee, consisting of representatives of this Society and of the Alpine Garden Society, has been formed. It met for the first time on the first day of the Joint Alpine Conference and Show. A great number of plants were submitted and several awards given. This Joint Committee will now sit at every Fortnightly Show at 12 o'clock, preceding the meeting of the Floral Committee B. Forms for the submission of plants to this Committee are obtainable on application to the Secretary, and the plants must be available in the Committee Room by 11.45 A.M. on the day of the Show. The next meeting of the Committee will be on Tuesday, June 9.

The regulations with regard to awards given by this Committee follow the general regulations of the Society, which can be obtained on application.

#### SMALL EXHIBITS.

At the Society's Meeting on April 7 and 8, one of the most interesting plants on the table set aside for small exhibits from Fellows was a dainty little mauve-flowered species of *Streptocarpus*, related to *S. polyanthus*, sent by Sir DANIEL HALL, the Director of the John Innes Horticultural Institution, who had received it from the National Botanic Garden of South Africa at Kerstenbosch. Dr. F. T. PAUL showed a variety of *Lycaste*  $\times$  *Lucianii* which had rosy-red sepals and reddish-crimson petals and lip. Dr. PAUL, who lives at Cloudeeslee, Grayshot, calls the plant 'Cloudeeslee Ruby.' Sir EDWARD CAVE sent from his garden at Sidmouth blooms of *Magnolia Sargentiana*. This handsome Chinese tree, which first flowered in this country in Mr. J. C. WILLIAMS's garden at Caerhays as recently as 1931, is as yet uncommon. WILSON, who introduced it, and described it as "one of the noblest of the family," said that when he was in Szechwan in 1903 he saw one tree of it over 80 feet high. As the rosy-red flowers are about 8 inches across, it must have been a wonderful sight when in bloom, and one can understand why, when he was in the neighbourhood five years later, he made a special journey to photograph it.

All Fellows are invited to exhibit interesting or well-grown plants, flowers, fruits or vegetables on this special small exhibits table. Any Fellow who desires to stage an exhibit consisting of not more than three pots, vases, or dishes may do so at any Fortnightly Meeting, although he has not applied for space beforehand. Such exhibits must be entered with the clerk at the small exhibits table by noon on the morning of the Meeting, and he will provide exhibitors' cards and stage the exhibits. Exhibitors are not permitted to place on this special table any notice or leaflets, nor may any orders be booked there. Exhibits staged under this regulation may be considered for Certificates of Cultural Commendation.

#### ERLESTONE PARK.

Further circulars in reference to Erlestone Park have been received at the Society's offices, and Fellows' attention is drawn to the statement already published in the JOURNAL, namely:

"In view of inquiries received and in order to avoid any misunderstanding on the part of the Fellows of the Royal Horticultural Society, the Council of the Society wishes it to be known that the appeal which has been made in connexion with Erlestone Park, Wiltshire, has not been in any way made with the support, or under the auspices, of the Society."

## INSPECTION OF GARDENS.

Many Fellows may not be aware of the terms under which their gardens can be inspected by the Society's Garden Inspector, and advice given thereon. They are set out below, and it will be seen that special arrangements can be made when Fellows living in the same district co-operate.

"The inspection of Gardens belonging to Fellows is conducted by a thoroughly competent Inspector from the Society, who reports and advises at the following cost, viz.: a fee of £3 3s. for one day (or £5 5s. for two consecutive days), together with all out-of-pocket expenses. No inspection may occupy more than two days, save by special arrangement. Should two or more Fellows residing in the same district, with their Gardens within easy reach of one another, desire to have the services of the Garden Inspector, arrangements will be made for such a combined inspection and the fee and expenses divided by consent of those concerned. Fellows wishing for the services of an Inspector are requested to give at least a week's notice and choice of two or three days, and to indicate the most convenient railway station and its distance from their Garden. Gardens can only be inspected at the *written* request of the *owner*."

## WHITE FLY PARASITE.

Where the parasite of the greenhouse white fly, *Encarsia formosa*, has been introduced it has proved extremely effective in checking the increase of this pest under glass, and large numbers have been distributed during the past few years. The demand has become so great that, in order to meet in a measure the cost of maintaining the parasite over the difficult winter months and packing and despatching it, the Council has fixed a charge of 2s. 6d. for a supply for a small house and 5s. for a large house, and applications for it should be accompanied by the sum named. It is useless to introduce it to houses until the average temperature is about 70° F. Early application should be made since the supply is limited, and it is hoped that Fellows who have found it successful will distribute it in their neighbourhood.

## WISLEY IN JUNE.

There is probably no month when the visitor can see so many different kinds of plants in bloom as in June. To mention but a few of the most striking and notable groups:

There are Roses, of which a great number of new plants have been placed in the long borders of Jubilee Avenue, which traverses the hillside above the Laboratory; Irises, some of which are also planted near the latter on the hill, and the newer varieties, still on trial, in the garden between the Peach wall and the main Rose walk from the entrance gates.

Under the Oak trees at the lower side of the old Pear orchard are to be found the collection of Paeonies, and in the trial grounds on the hills are also Lupins, Cornflowers, Delphiniums, and the *Sidalceas* planted this spring. These last, however, can hardly be expected to show their true qualities until next season.

In the Alpine House there will still be many plants to attract Fellows; the later *Primula* species, *Phlox mesaleuca*, Campanulas, *Lewisia*s, *Phyteuma comosum*, *Ramondias*, and *Wahlenbergias* are some of them. On the Rock Garden more *Primulas*, especially of the moisture-loving *Sikkimensis* group, *Aethionemas*, *Helianthemums*, *Geraniums*, and *Dianthus* should all be at their height this month.

*Rhododendrons* may be expected as the chief feature in the Wild Garden, more particularly the large-flowered hybrids such as *Gauntlettii*, but this is also the time to see many of the *Primulas* which grow so happily there, the earlier species of *Lilies* (*Lilium rubellum* and *L. Szovitsianum*), the pink *Kalmias*, Blue Poppies (*Meconopsis betonicifolia*), and the attractive Fringe Tree (*Chionanthus virginica*) which grows in the small recess at the extreme western end facing the Rock Garden.

The Heath Garden will not show many *Heathers* now, but there are several different forms of *Cytisus*, both species and hybrids. Among the shrubs in Seven Acres mention must be made of the *Deutzias*, *Philadelphuses*, *Escallonias*, *Buddleia alternifolia* beside the pond, and numbers of *Berberis* species and hybrids which should now be in bloom.

As in last month it will be well worth the while of those who have enough time to walk through the Pinetum to Howard's Field, where there is a large collection of *Cistus* species and related families flourishing in the light soil; and also to see the Rose species, planted along the river walk. At the north-eastern

end of these will be found a new planting of the Provence, Centifolia, Gallica, *rugosa*, and other groups of old-fashioned Roses, placed and labelled according to their different sections. In the early part of the month the late varieties of Lilacs should still be flowering, and there are also many kinds of ornamental trees and shrubs in this part of the Gardens.

On returning, the visitor may walk either up the Herbaceous border, or through the Award of Merit or Azalea Gardens to the glasshouses. In the large Temperate house some or all of the following should be found in flower: Pelargoniums, Fuchsias, *Ipomæa Learii* (a blue Convolvulus-like climber), the yellow, shrubby *Pentstemon antirrhinoides*, the curious *Strelitzia Reginae* (Bird of Paradise flower), as well as other climbing plants in Lonicera, Bougainvillaea, and Rhodochiton. The Half-hardy house shows a more varied selection of plants, including the pink, shrubby *Ebenus creticus*, the fiery *Lotus Bertholetii*, Mesembryanthemums, bright blue *Leschenaultia biloba*, *Petunia integrifolia*, species of Oxalis, Nierembergias, and the climbers *Hidalgia* and *Cobaea* trained on the supports of the house.

## GENERAL MEETINGS.

APRIL 7, 1936.

Mr. T. HAY, M.V.O., V.M.H., in the Chair.

A lecture on "Newer Primulas" was given by Mr. N. K. GOULD (see p. 255).

**SCIENTIFIC COMMITTEE.**—Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and seven other members present.

*Bulbs of Notholirion Thomsonianum.*—Mr. Cotton showed drawings and specimens illustrating the origin and attachment of bulbils in *Notholirion Thomsonianum*. It is well known that the bulbils are attached to the base of the present bulb by means of fine strands. The specimens showed that the bulbils arise at various levels on the inner side of the bulb-scales. They appear to develop as adventitious buds from the vascular bundles of the scales, and when the soft tissue of the scales rots away the vascular bundles persist and form the well-known strands on which the bulbils are found. Bulbil formation does not take place immediately before flowering, but a year previously.

*New aphid on Gladiolus corms.*—Mr. G. Fox-Wilson showed a corm of *Gladiolus* with a young shoot covered with an aphid which proved to be *Myzus duffieldii* of Theobald. All the corms in store at Wisley during the winter had been attacked by this aphid.

*Forsythia suspensa decipiens.*—Mr. J. Grimes of Cardiff sent flowering stems of a *Forsythia*, with dark yellow flowers on pedicels nearly an inch long, agreeing with the description of the variety *decipiens*.

*Narcissus triandrus* × *N. Bulbocodium*.—A beautiful clear deep yellow hybrid between *N. triandrus* and *N. Bulbocodium* was shown by Mrs. Dimsdale and a Botanical Certificate was unanimously recommended.

**FRUIT AND VEGETABLE COMMITTEE.**—Mr. E. A. BUNYARD, F.L.S., in the Chair, and seven other members present.

**Exhibits.**

Mr. A. Falconer, Stamford Park, Stalybridge: Onion 'Autumn Triumph.'

Mr. K. M. McCreadie, 5 Denmark Road, Whitworth Park, Manchester 15 seedling Apple.

Imperial Fruit Show Ltd.: South African fruits in season.

**FLORAL COMMITTEE A.**—Mr. J. M. BRIDGEFORD in the Chair, and fifteen other members present.

**Awards Recommended:—***Silver Flora Medal.*

To Messrs. Allwood, Haywards Heath, for Carnations.

*Silver Banksian Medal.*

To Ashington Nurseries, Ashington, for Carnations.

To Messrs. Blackmore &amp; Langdon, Bath, for Polyanthus and Blue Primroses.

To Messrs. Napier, Taunton, for Carnations.

*Flora Medal.*

To Messrs. Blom, Addlestone, for Roses.

To Messrs. Engelmann, Saffron Walden, for Carnations, Pansies and Gerberas.

To Messrs. S. Low, Enfield, for Carnations.

*Banksian Medal.*

To Messrs. Blackmore &amp; Langdon, Bath, for Schizanthus.

To Messrs. Kelway, Langport, for Tree Paeonies.

*Award of Merit.*To *Hippeastrum* 'Carolyn' as a greenhouse pot plant (votes unanimous), from Mrs. Walter Burns (gr. Mr. G. H. Wright), Hatfield. See p. 261.*Selected for trial at Wisley.*

Auricula 'Furzey,' from Messrs. Prichard, Christchurch.

*Primula acaulis* 'Buxton's Blue,' from Lord Aberconway, Bodnant.

**Other Exhibits.**

- Messrs. Blom, Addlestone : Rose (to be seen again).  
 Messrs. Buckwell, St. Mary's Cray : Violet 'Alpine Beauty.'  
 Messrs. Clark, Dover : Polyanthus, Primroses, Violas, etc.  
 F. C. Litler Jones, Esq., F.R.C.S., Bransgore : *Hippeastrum* 'Isobel Litler Jones.'  
 Orpington Nurseries, Orpington : Polyanthus.  
 Messrs. Sutton, Reading : Stock 'Beauty of Nice Mixed.'

**FLORAL COMMITTEE B.**—Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and twenty-two other members present.

**Awards Recommended :—**

*Silver Flora Medal.*

To Messrs. Waterer, Bagshot, for flowering trees and shrubs.

*Silver Banksian Medal.*

To Messrs. Hillier, Winchester, for flowering trees and shrubs.

To Messrs. Russell, Richmond, for greenhouse shrubs and plants.

*Flora Medal.*

To Messrs. Cheal, Crawley, for flowering shrubs.

To Hocker Edge Gardens, Cranbrook, for bulbous plants.

To Mr. E. Ladhams, Elstead, for Primulas and other alpine plants.

To Messrs. Stuart Low, Enfield, for greenhouse shrubs and plants.

To Mr. W. J. Marchant, Staplehill, for Shortias, Rhododendrons and other shrubs.

To Messrs. Prichard, Christchurch, for Primulas and other alpine plants.

*Banksian Medal.*

To Alpine Nurseries, West Moors, for alpine plants.

To Messrs. Barr, Taplow, for bulbous plants.

To Messrs. Burkwood & Skipwith, Kingston, for flowering shrubs.

To Dean Nurseries, Bournemouth, for alpine plants and shrubs.

To Messrs. Rogers, Southampton, for Primulas and other alpine plants.

To Mr. G. Welch, Cambridge, for Primulas and other alpine plants.

*Lindley Medal.*

To Mr. T. T. Barnard, Wareham, for Cape bulbous plants.

*First-class Certificate.*

To *Clematis Armandii* 'Apple Blossom' as a hardy flowering shrub (votes 14 for), from Messrs. Russell, Richmond. See p. 261.

*Award of Merit.*

To *Primula Sherriffae* as a flowering plant for the alpine house (votes unanimous), from T. Hay, Esq., Hyde Park, W. 2. See p. 263.

To *Prunus Persica alba pendula* as a hardy flowering tree (votes 18 for, 1 against), from Messrs. Russell, Richmond. See p. 264.

To *Sarcococca Hookeriana* as a hardy, ornamental-fruited shrub (votes 12 for, 5 against), from Lord Aberconway, Bodnant. See p. 264.

To *Serruria florida* as a tender flowering shrub (votes 18 for), from the Hon. Mrs. Ryder, Beaulieu. See p. 264.

**Other Exhibits.**

Messrs. Bunyard, Maidstone : alpine and bulbous plants.

Mrs. M. M. Butler, Cobham : *Ranunculus creticus albus*.

Mr. W. A. Constable, Southborough : *Lilium tenuifolium*.

Mr. A. Corderoy, Eltham : alpine plants.

Messrs. Elliott, Stevenage : *Primula* hybrid (*P. Allionii* × *P. hirsuta*).

Mrs. Vera Higgins, Croydon : *Euphorbia antisiphilitica*.

Miss Hopkins, Coulsdon : alpine plants.

Mr. L. Lawrence, Taplow : succulents.

Mr. W. J. Marchant, Staplehill : *Prunus tenuiflora*, *Berberis Darwinii macrophylla*.

Marsden Nursery, Ashted : bulbous and alpine plants.

Messrs. Maxwell & Beale, Broadstone : alpine plants.

Messrs. Neale, Worthing : succulents.

Messrs. Prichard, Christchurch : *Haberlea virginalis*, *Primula marginata grandiflora*.

Messrs. Redgrove & Patrick, Sevenoaks : Azaleas and alpine plants.

Mr. J. Robinson, Eltham : alpine plants.

Messrs. Russell, Richmond : Camellia 'Peach Blossom.'

Messrs. Stewart, Ferndown : *Stranvaesia Davidiana*, *S. Davidiana undulata*.

Walton Park Nurseries, Walton : shrubs and alpine plants.

Waterperry School of Horticulture, Oxford : alpine plants.

Mr. R. Colpoys Wood, West Drayton : Conifers.



**ORCHID COMMITTEE.**—Sir JEREMIAH COLMAN, Bt., in the Chair, and thirteen other members present.

**Awards Recommended :—**

*Award of Merit.*

To *Cymbidium* × 'Carisbrook' var. 'Dusky Monarch' ('Ceres' × 'Ralph Sander') (votes unanimous), from Messrs. McBean, Cooksbridge. See p. 261.

To *Cymbidium* × 'Susette' var. 'Perfection' (*insigne* × 'Magali Sander') (votes unanimous), from Messrs. McBean, Cooksbridge. See p. 261.

To *Cymbidium* × 'Pharos' var. 'Emperor' ('Flamingo' × 'Warbler') (votes 11 for, 1 against), from Messrs. H. G. Alexander, Tetbury. See p. 261.

To *Cymbidium* × 'Louis Sander,' Cooke's var. (*Alexanderi* × 'Ceres') (votes 10 for, 1 against), from Sir William Cooke, Bt., Hampstead Norris, Newbury, Berks. See p. 261.

To *Odontoglossum* × 'Palmyras Queen,' Clovelly var. ('Purple Queen' × 'St. James') (votes 9 for, 3 against), from F. J. Hanbury, Esq., Brockhurst, East Grinstead. See p. 263.

To *Cymbidium* × 'Cassandra,' Dell Park var. (*Alexanderi* × 'Goosander') (votes unanimous), from Baron Bruno Schröder, Englefield Green, Surrey. See p. 261.

*Cultural Commendation.*

To Mr. J. E. Jones, Orchid grower to C. Glidden Osborne, Esq., Marlow-on-Thames, for *Vanda suavis*, a tall and well-leaved plant with four many-flowered spikes.

To Messrs. Armstrong & Brown, Tunbridge Wells, for *Cirrhopetalum picturatum*, a robust plant bearing eight many-flowered umbels.

**Other Exhibits.**

Messrs. McBean, Cooksbridge : a group.

Messrs. Stuart Low, Jarvis Brook : a group.

Messrs. Armstrong & Brown, Tunbridge Wells : a group.

Messrs. H. G. Alexander, Tetbury : a group.

Messrs. Sanders, St. Albans : a group.

Messrs. Charlesworth, Haywards Heath : a group.

Frank T. Paul, Esq., Grayshott, Surrey : *Lycaste* × *Lucianii*.

E. Kenneth Wilson, Esq., Wimbledon : *Cymbidiums*.

**NARCISSUS AND TULIP COMMITTEE.**—Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and fourteen other members present.

**Awards Recommended :—**

*Gold Medal.*

To Mr. J. L. Richardson, Prospect House, Waterford, for Daffodils.

To the Rt. Hon. Lord Rendlesham, Bosloe, Mawnan, nr. Falmouth, for Daffodils.

*Silver-gilt Flora Medal.*

To Messrs. Barr, Covent Garden, for Daffodils.

*Silver Flora Medal.*

To Mr. R. F. Calvert, Coverack, Cornwall, for Daffodils.

To Mr. G. H. Furness, Berrow, nr. Burnham, Somerset, for Daffodils.

To Messrs. D. Stewart, Ferndown Nurseries, nr. Wimborne, for Daffodils.

*Flora Medal.*

To Messrs. R. H. Bath, Ltd., Wisbech, for Daffodils.

*First-class Certificate.*

To *Narcissus* 'Bodilly' as a variety for show purposes (votes unanimous), from Mr. J. L. Richardson. See p. 262.

To *Narcissus* 'Porthilly' as a variety for show purposes (votes unanimous), shown by Mr. J. L. Richardson. See p. 262.

*Selected for Trial.*

The following were selected for trial at Wisley as varieties for garden decoration :—

*Narcissus* 'Worlington,' shown by Miss K. M. Hinchliff, Worlington House, Instow.

*Narcissus* 'Rosamond' and *Narcissus* 'William,' shown by Miss R. Thornton, Brockhall, Northampton.

The following were selected for trial at Kirton :—

*Narcissus* 'Bryn Orange,' as a variety for garden decoration, for cutting and for market, shown by Mr. W. A. Watts, St. Asaph.

*Narcissus* 'Porthilly,' as a variety for market, shown by Mr. J. L. Richardson.

*Plant referred to Scientific Committee.*

A hybrid between *Narcissus triandrus* and *N. Bulbocodium* was referred to the Scientific Committee (see p. xcv).

*Plant for Identification.*

A tulip sent to be named by C. W. Christie-Miller, Esq., Swyncombe House, Henley-on-Thames, was identified as *Tulipa praestans*.

**JOINT RHODODENDRON COMMITTEE.**—Mr. E. H. WILDING in the Chair, and nine other members present.

**Exhibits.**

Col. Bolitho, Heamoor, Cornwall: *R. sinogrande* var. *boreale*, *R. Cubittii*, *R.* × ‘*Neriarb.*’ and *R. Johnstoneanum*.

E. J. P. Magor, Esq., St. Tudy, Cornwall: *R.* × ‘*Dicharb.*’ and *R. agastum*.

R. E. Horsfall, Esq.: *R.* × ‘*Mary Power.*’

Lord Aberconway: *R.* × ‘*Bella.*’ and a hybrid between *R.* × *Shilsonii* and *R. Barclayi*.

APRIL 16–17, 1936.

**DAFFODIL SHOW.**

*Chief Awards in the Competitive Classes.*

*The Englehart Challenge Cup* and a *Silver-gilt Flora Medal*, for twelve varieties of Daffodils raised by the exhibitor.

To Mr. J. L. Richardson, Prospect House, Waterford.

*Silver-gilt Banksian Medal*, for twelve varieties of Daffodils not in commerce.

To Mr. J. L. Richardson.

*The Banksian Medal* offered for the best bloom shown in the competitive classes was awarded to Mr. J. L. Richardson, for a bloom of his *Narcissus* seedling No. 430.

**EARLY MARKET PRODUCE SHOW.**

The chief Awards in the Competitive Classes were:

*Silver Cup* for the most successful competitor.

To Mr. A. W. Secrett, Manor Farm, Ham, Surrey.

*Silver Knightian Medal* to the competitor gaining the highest number of points for salad vegetables.

To Captain R. G. M. Wilson, Cambridge.

*Knightian Medal* to the competitor gaining the second highest number of prize-points for salad vegetables.

To Mr. A. W. Secrett, Ham, Surrey.

*Silver Knightian Medal* to the competitor gaining the highest number of prize-points for forced vegetables.

To Messrs. the Sussex Nurseries, Rustington, Sussex.

*Knightian Medal* to the competitor gaining the second highest number of prize-points for forced vegetables.

To Mr. J. Harnett, Hoddesdon.

*Silver Knightian Medal* to the competitor gaining the highest number of prize-points for outdoor-grown vegetables.

To Mr. J. J. Barker, Southfleet, Kent.

*Knightian Medal* to the competitor gaining the second highest number of prize-points for outdoor-grown vegetables.

To Mr. A. W. Secrett, Ham, Surrey.

*Silver Banksian Medal* to the competitor gaining the highest number of prize-points for flowers.

To Messrs. John Wilson, Hereford.

*Banksian Medal* to the competitor gaining the second highest number of prize-points for flowers.

To Mr. J. Harnett, Hoddesdon.

*Awards made to non-competitive exhibits.*

The central feature of the Show was a co-operative display of vegetables and flowers for which the Schedule Committee was responsible.

*Gold Medal.*

To Messrs. J. T. White, Spalding, for an exhibit of Daffodils.

To Mr. F. A. Secrett, Walton-on-Thames, for an exhibit of vegetables and flowers in market packages.

*Silver-gilt Knightian Medal.*

To Messrs. Sutton, Reading, for a collection of vegetables.

To the Worthing & District Growers, Worthing, for an exhibit of vegetables, flowers and fruit in market packages.

To Mr. A. W. Secrett, Ham, Surrey, for an exhibit of vegetables in market packages.

To the South Bucks Growers, Aylesbury, for an exhibit of vegetables, flowers and fruit in market packages.

*Silver-gilt Flora Medal.*

To the British Flower Marketing Association, for an exhibit of Roses, Tulips, Irises, Lilies, Hydrangeas, Carnations, etc.

*Silver-gilt Banksian Medal.*

To Mr. J. Harnett, Hoddesdon, for an exhibit of Hydrangeas and Polyantha Roses.

*Silver Knightian Medal.*

To Messrs. Toogood, Southampton, for an exhibit of vegetables.

To Captain R. G. M. Wilson, Spalding, for an exhibit of vegetables in market packages.

*Silver Flora Medal.*

To Mr. Douglas Foxwell, Balcombe, for an exhibit of Sweet Peas in market packages.

A lecture was given by Mr. H. V. TAYLOR, O.B.E., B.Sc., on "Vegetables for Pickling."

Chairman, Mr. E. A. BUNYARD, F.L.S.

**FRUIT AND VEGETABLE COMMITTEE.**—Mr. E. A. BUNYARD, F.L.S., in the Chair, and thirteen other members present.

**Awards Recommended :—**

For Medals awarded by the Council, see above.

**Other Exhibits.**

Co-operative exhibit of vegetables, flowers and fruit in market packages.

Mr. Cecil Robinson, Quadring, Spalding: Cucumbers, Lettuce, Rhubarb, and Daffodils in market packages.

**NARCISSUS AND TULIP COMMITTEE.**—Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and twenty-three other members present.

**Awards Recommended :—***Gold Medal.*

To Mr. J. L. Richardson, Prospect House, Waterford, for Daffodils.

To Messrs. J. T. White, Spalding, for Daffodils.

*Silver-gilt Flora Medal.*

To Messrs. Barr, 12 King Street, Covent Garden, for Daffodils.

To Messrs. R. H. Bath, Wisbech, for Daffodils.

To Messrs. J. R. Pearson, Lowdham, for Daffodils.

To Mr. Guy L. Wilson, Broughshane, co. Antrim, for Daffodils.

*Silver-gilt Banksian Medal.*

To the Donard Nursery Co., Newcastle, co. Down, for Daffodils.

To the Lincoln Nurseries, Spalding, for Daffodils.

*Silver Flora Medal.*

To Messrs. W. Farrow, Holbeach St. Marks, for Daffodils.

To the Welsh Bulb Fields, St. Asaph, for Daffodils.

To the Greatford Gardens, Greatford, Stamford, for Daffodils.

To Messrs. Wakeley, Bankside, S.E., for Daffodils.

*Silver Banksian Medal.*

To Mr. R. F. Calvert, Coverack, Cornwall, for Daffodils.

To Mr. G. H. Furness, Berrow, Somerset, for Daffodils.

To Messrs. D. Stewart, Ferndown, near Wimborne, for Daffodils.

To Mr. A. K. Watson, Upton, Acle, for Daffodils.

To Mr. A. M. Wilson, Middlemoor, Presteign, for Daffodils.

To Messrs. Dobbie, Edinburgh, for Daffodils.

*Flora Medal.*

To Mrs. Barchard, Horsted Place, Uckfield, for Daffodils.  
To C. T. Felton, Esq., Black Green Manor, St. Albans, for Daffodils.  
To Mr. Peter Lower, Manland Avenue, Harpenden, for Daffodils.

*Banksian Medal.*

To Messrs. Cuthberts, Goff's Oak, Caldecott, for Daffodils.  
To the Bronwylyfa Fruit and Bulb Farm, St. Asaph, for Daffodils.  
To Mr. G. H. Longford, Abingdon, for Daffodils.

*First Class Certificate.*

To *Narcissus* 'St. Egwin' as a variety for show purposes (votes 14 for), from Mr. J. L. Richardson, Waterford. See p. 263.

To *Narcissus* 'Trenoon' as a variety for show purposes (votes 10 for, 1 against), shown by Mr. J. L. Richardson, Waterford. See p. 263.

To *Narcissus* 'Solid Gold' as a variety for show purposes (votes 11 for), shown by the Donard Nursery Co. See p. 263.

*Award of Merit.*

To *Narcissus* 'Rosslare' as a variety for show purposes (votes unanimous), shown by Mr. J. L. Richardson. See p. 263.

To *Narcissus* 'Mr. Jinks' as a variety for show purposes (votes unanimous), shown by Mr. J. L. Richardson. See p. 262.

To *Narcissus* 'Franklin' as a variety for show purposes (votes unanimous), shown by Mr. A. M. Wilson, Middlemoor, Presteign. See p. 262.

To *Narcissus* 'Fairy King' as a variety for show purposes (votes 8 for), shown by Mr. Guy L. Wilson, Broughshane. See p. 262.

*Selected for Trial.*

A *Narcissus* shown under the name 'Blanche' by Miss R. Thornton, Brockhall, Northampton, was selected for trial at Kirton as a variety for garden decoration, for cutting and for market. It was also selected for trial at Wisley as a variety for garden decoration.

*The Peter Barr Memorial Cup.*

It was unanimously recommended that the Peter Barr Memorial Cup, which is awarded annually to someone who has done good work on behalf of the Daffodil, be awarded to Mr. Alfred W. White for the public-spirited way in which he has promoted the cultivation of the Daffodil in Lincolnshire.

APRIL 21-22, 1936.

SEWELL MEDAL COMPETITIONS.

*The Sewell Medal*, offered for the best exhibit of six pots or pans of plants suitable for the rock garden or alpine house.

*Amateur Growers' Medal.*

To the Lord Aberconway, C.B.E., V.M.H., Bodnant, Tal-y-Cafn, Wales.

*Trade Growers' Medal.*

To Messrs. the Hocker Edge Gardens, Cranbrook.

A lecture was given by Mr. E. R. CARTER on "Carnation Growing for the Amateur." (See p. 246.)

Chairman, Mr. J. M. BRIDGEFORD.

APRIL 21, 1936.

**SCIENTIFIC COMMITTEE.**—Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and eight other members present.

*Primula hybrid.*—Dr. Denham sent a *Primula* which he had collected in the Rio Freddo, Col di Tenda, some years ago. It was apparently a hybrid between *Primula marginata* and *P. Allionii* and had concolorous purple-mauve flowers rather small and in stalked umbels. Dr. Denham proposed the name 'Beatrice Lascaris' for this plant.

*Rust on Sempervivum.*—Mr. Odell showed rosettes of *Sempervivum affine* (?) attacked by the fungus *Endophyllum Sempervivi* and drew attention to the elongation of the attacked leaves.

*Hippeastrum equestre.*—Lady Lawrence showed flowering bulbs of a plant collected in N. India near Darjeeling which proved to be a form of *Hippeastrum equestre*, a native of S. America apparently run wild in the Indian habitat.

*Muscari sp.*—Lady Lawrence also sent a plant of a *Muscari* collected by Mr. E. K. Balls in Turkey which was referred to Dr. Turrill.

*Prunus incisa* × *P. Sargentii*.—Mr. Collingwood Ingram sent branches of a seedling from *Prunus incisa* raised in his garden and having flowers larger than *P. incisa*, more coloured and on longer stalks. The leaves closely approached those of *P. incisa*.

**FRUIT AND VEGETABLE COMMITTEE.**—Mr. E. A. BUNYARD, F.L.S., in the Chair, and six other members present.

There was no business before the committee on this occasion.

**FLORAL COMMITTEE A.**—Mr. J. M. BRIDGEFORD in the Chair, and fourteen other members present.

**Awards Recommended :—**

*Silver Flora Medal.*

To Messrs. Chaplin, Waltham Cross, for Roses.

*Silver Banksian Medal.*

To Messrs. Blackmore & Langdon, Bath, for Schizanthus.

To Mr. G. H. Dalrymple, Bartley, for Auriculas and Primulas.

To Mr. J. Douglas, Great Bookham, for Auriculas.

To Messrs. Engelmann, Saffron Walden, for Carnations, Gerberas and Pansies.

*Flora Medal.*

To Messrs. Kelway, Langport, for Tree Paeonies.

*Banksian Medal.*

To Messrs. Blackmore & Langdon, Bath, for Polyanthus and Blue Primroses.

To Messrs. Boekee, Wisbech, for Anemones.

To Messrs. Dobbie, Edinburgh, for Violas.

To Messrs. Toogood, Southampton, for Cinerarias.

*Award of Merit.*

To Hippeastrum 'Clive Cookson' as a greenhouse pot plant (votes unanimous), from Clive Cookson, Esq. (gr. Mr. W. J. Stables), Hexham. See p. 262.

*Selected for Trial at Wisley.*

*Primula acaulis* 'Kenneth Laing,' from Mrs. J. Laing, Hawick.

**Other Exhibits.**

Messrs. Bedford & Page, Cambridge : *Primula* hybrid.

A. Corderoy, Esq., Eltham : *Primula* 'Mrs. A. Corderoy.'

Dean Gardens, Longniddry : Primroses, Auriculas.

J. Gray, Esq., Saxmundham : *Polyanthus* 'Jan.'

G. Kerswill, Esq., Exeter : *Geranium* (to be seen again).

H. G. Moore, Esq., Dorchester : *Polyanthus*.

Mrs. A. Williams Wynn, Llansantffraid : *Polyanthus* 'Mary Rose.'

**FLORAL COMMITTEE B.**—Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and twenty other members present.

**Awards Recommended :—**

*Silver-gilt Lindley Medal.*

To Lt.-Col. L. C. R. Messel, O.B.E., Handcross, for a group of hardy terrestrial Orchids.

*Silver Banksian Medal.*

To Messrs. Cheal, Crawley, for flowering trees and shrubs.

To Messrs. Hillier, Winchester, for flowering trees and shrubs.

To Mr. E. Ladhams, Elstead, for Primulas and other alpine plants.

To Messrs. Stuart Low, Enfield, for greenhouse shrubs and plants.

To Mr. R. C. Notcutt, Woodbridge, for flowering shrubs.

To Messrs. Prichard, Christchurch, for alpine plants and dwarf shrubs.

To Messrs. Russell, Richmond, for flowering shrubs and greenhouse plants.

*Flora Medal.*

To Messrs. Elliott, Stevenage, for Primulas and other alpine plants.

To Messrs. Waterer, Twyford, for alpine plants.

To Mr. G. Welch, Cambridge, for alpine plants.

To Messrs. Wm. Wood, Taplow, for flowering trees and shrubs.

*Banksian Medal.*

To Messrs. Barr, Taplow, for Narcissi, Tulips, and other bulbous plants.

To Messrs. Bedford & Page, Cambridge, for alpine plants.

To Brookside Nurseries, Oxford, for alpine plants.

To Colesbourne Gardens, Cheltenham, for Fritillarias.

To Mr. W. A. Constable, Southborough, for Lilies and other bulbous plants.

To Hocker Edge Gardens, Cranbrook, for alpine and bulbous plants.

To Messrs. Neale, Worthing, for succulents.

To Messrs. Rogers, Southampton, for Primulas and other alpine plants.

*Award of Merit.*

To *Oxylobium ellipticum* as a flowering plant for the cool greenhouse (votes unanimous), from Lt.-Col. L. C. R. Messel, O.B.E., Handcross. See p. 263.

## ON PROCEEDINGS OF THE ROYAL HORTICULTURAL SOCIETY.

To *Primula brevifolia* as a flowering plant for the alpine house (votes 12 for, 2 against), from Lord Aberconway, Bodnant. See p. 263.

To *Prunus mutabilis* as a hardy flowering tree (votes 14 for), from Collingwood Ingram, Esq., Benenden. See p. 264.

### Cultural Commendation.

To Mr. F. C. Puddle, gardener to Lord Aberconway, Bodnant, for a specimen plant of *Schizocodon macrophylla*.

### Other Exhibits.

Lord Aberconway, Bodnant: *Primula rotundifolia*.

G. P. Baker, Esq., Sevenoaks: *Primula Dubernardiana*, *Lewisia Howellii*, Richey's var.

W. G. Baker, Esq., Oxford: *Habenaria Bonatea*.

Mrs. Aldrich Blake, Ross-on-Wye: *Erica mediterranea*.

Messrs. Burkwood & Skipwith, Kingston: flowering shrubs.

Chez Nous Nurseries, Newick: alpine plants.

Mr. A. Corderoy, Eltham: alpine plants.

Dean Nursery, Bournemouth: alpine plants.

Lt.-Col. C. H. Grey, Cranbrook: *Lewisia Tweedyi*, *Calanthe tricarinata*.

Miss Hopkins, Coulsdon: hardy plants.

Collingwood Ingram, Esq., Benenden: *Prunus serrulata* 'Benden,' *P. serrulata* 'Asano.'

G. H. Johnstone, Esq., Grampound Road: *Gaultheria Forrestii*.

Mr. J. J. Klinkert, Richmond: clipped Box trees.

Lady Lawrence, Dorking: *Muscari* sp., *Ilex sikkimensis*.

Marsden Nursery, Ashted: hardy plants.

Messrs. Maxwell & Beale, Broadstone: alpine plants.

Messrs. Redgrove & Patrick, Sevenoaks: shrubs and alpine plants.

P. M. Syngé, Esq., West Byfleet: *Canarina Emini*.

Mr. W. Wells, jun., Merstham: alpine plants.

Mr. R. Colpoys Wood, West Drayton: shrubs.

**ORCHID COMMITTEE.**—Sir JEREMIAH COLMAN, Bt., in the Chair, and fifteen other members present.

### Awards Recommended:—

#### Gold Medal.

To Messrs. Charlesworth, Haywards Heath, for a group of *Odontoglossums*.

#### Banksian Medal.

To A. M. Wells, Esq., Chiddingfold, Surrey, for a group.

#### First-class Certificate.

To *Odontoglossum* × 'Cythera' var. 'Grandeur' ('President Poincaré' × 'Tityus'), (votes 9 for, 4 against), from Messrs. Charlesworth. See p. 263.

#### Award of Merit.

To *Cymbidium* × 'Madonna' var. 'Stella Brocklebank' (*Alexanderi* × 'Memoria P. W. Janssen'), (votes 13 for), from Capt. G. S. Brocklebank, Chingley Manor, Flimwell, Kent. See p. 261.

To *Cymbidium* × 'Morvyth,' Brockhurst var. (*Alexanderi* × 'Redstart'), (votes 12 for, 2 against), from F. J. Hanbury, Esq., East Grinstead. See p. 261.

#### Preliminary Commendation.

To *Vuystekeara* × 'Adria' (*Odontioda* × 'Rona' × *Miltonia* × 'Lycaena'), (votes 13 for), from Messrs. Charlesworth, Haywards Heath.

### Other Exhibits.

Messrs. Stuart Low, Jarvis Brook: a group.

Messrs. Armstrong & Brown, Tunbridge Wells: a group.

**NARCISSUS AND TULIP COMMITTEE.**—Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and six other members present.

### Awards Recommended:—

#### Gold Medal.

To Mr. J. L. Richardson, Prospect House, Waterford, for Daffodils.

#### Silver Flora Medal.

To Messrs. Barr, 12 King Street, Covent Garden, W.C. 2, for Daffodils.

To Messrs. R. H. Bath, Wisbech, for Daffodils.

#### Silver Banksian Medal.

To Messrs. Wakeley, Bankside, S.E. 1, for Daffodils.

*Banksian Medal.*

To Messrs. D. Stewart, Ferndown, near Wimborne, for Daffodils and Tulips.

*First Class Certificate.*

To *Narcissus* 'Crocus' as a variety for show purposes (votes unanimous), shown by Mr. J. L. Richardson. See p. 262.

*Selected for Trial.*

The following, shown by Messrs. R. H. Bath, were selected for trial at Wisley as varieties for garden decoration :

*Narcissus* 'Edric.'

*Narcissus* 'No. L466.'

*Tulip for Identification.*

A Tulip collected by Mr. E. K. Balls under the No. 281, and sent by Lady Lawrence, was referred to Sir Daniel Hall, who identified it as a form of *Tulipa oculis-solis* resembling the one called *sharonensis*.

**JOINT RHODODENDRON COMMITTEE.**—Mr. J. B. STEVENSON in the Chair, and six other members present.

There was no business before the Committee on this occasion.

## BRITISH CARNATION SOCIETY'S SPRING SHOW.

**JOINT PERPETUAL FLOWERING CARNATION COMMITTEE.**—Mr. J. M. BRIDGEFORD in the Chair, and eleven other members present.

*Exhibits.*

Carnation 'Tangerine' (to be seen again), from Messrs. Allwood Bros., Haywards Heath.

Carnation 'Easter' (to be seen again), from Mrs. J. W. Philips, St. Albans.

Carnation 'Audrey,' from Mr. J. J. Passmore, East Preston, Sussex.

Carnation 'Grandeur,' from Mr. J. Stevenson, Wimborne.

APRIL 28, 1936.

## RHODODENDRON ASSOCIATION'S SHOW.

**JOINT RHODODENDRON COMMITTEE.**—Mr. J. B. STEVENSON in the Chair, and sixteen other members present.

*Exhibits.*—*Rhododendron*  $\times$  *russautinii* (*russatum*  $\times$  *Augustinii*), as a hardy plant for general garden use.

*Rhododendron* hybrid, unnamed (*Thomsonii*  $\times$  *Falconeri*), as a hardy garden plant for general use. Both from Sir John Ramsden, Gerrard's Cross, Bucks.

*Rhododendron* 'Beryl' (A.M. 1931), as a hardy flower and foliage plant for general garden use.

*Rhododendron* 'Amethyst' (A.M. 1931), as a hardy flower and foliage plant for general garden use. Both from Admiral Walker-Heneage-Vivian, Clyne Castle, Swansea.

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(Cont. from p. lxxxviii.)

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# EXTRACTS FROM THE PROCEEDINGS

## OF THE

# ROYAL HORTICULTURAL SOCIETY.

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### NOTICES TO FELLOWS.

#### CHELSEA FLOWER SHOW.

Chelsea Flower Show has once more come and gone, and once again served its purpose as a great meeting place for all interested in gardens and flowers. The attendance was not quite so large as it was last year, owing to the cool, rather chilly weather during the three days it was open. The early hours, between 8 and 10 o'clock on Wednesday morning, May 20, were put to better use than usual, doubtless by those very keenly interested gardeners who wanted to avoid the more crowded hours.

His Majesty the King, Queen Mary, the Duke and Duchess of York and other members of the Royal Family honoured the Society by visiting the Show.

A noticeable feature of the Show was the increased number of rock gardens, probably due to the very active interest in this class of gardening following the Conference on Alpine Plants which was held shortly before Chelsea Show.

Particulars of the awards made at Chelsea Show are given on p. cxxiv.

#### SMALL EXHIBITS AT CHELSEA.

Among the most interesting plants shown with the smaller exhibits from Fellows at Chelsea Show were some white and pale pink forms of *Ranunculus asiaticus*, an attractive member of the Buttercup family from the Near East, shown by Mr. G. P. Baker, V.M.H. His Grace the Duke of Richmond and Gordon sent some exceptionally well-grown specimens of *Richardia Pentlandii*, a plant from Basutoland which greatly resembles its relative, the common Arum Lily, except that the flowers are of a bright gamboge-yellow marked inside at the base with dark purple. The specific name is derived from the residence of Mr. White of Pentland House, Lee, who first flowered the plant from imported tubers in 1892 and exhibited it before the Society in May of that year. Another interesting plant was *Iris susiana*, sent by Mr. E. Brock. The large flowers, curiously marked with veins and dots of purple-black on a grey ground, are always admired. Although its name appears to refer to Susa, the ancient capital of Persia, *Iris susiana* does not grow there and, like many another good plant, appears to have no real home nowadays.

Fellows are invited to exhibit interesting or well-grown plants, flowers, fruits or vegetables on this special small exhibits table. Any Fellow who desires to stage an exhibit consisting of not more than three pots, vases, or dishes may do so at any Fortnightly Meeting, although he has not applied for space beforehand. Such exhibits must be entered with the clerk at the small exhibits table by noon on the morning of the Meeting, and he will provide exhibitor's cards and stage the exhibits. Exhibitors are not permitted to place on this special table any notice or leaflets, nor may any orders be booked there. Exhibits staged under this regulation may be considered for Certificates of Cultural Commendation.

#### SUBSCRIPTIONS.

Fellows are reminded that their friends joining the Society after July 1 and before October 1 will be required to pay only a half-year's subscription, and will receive the monthly journal commencing with the July number. Those joining after October 1 and before January 1 pay a full year's subscription, which entitles them to all the privileges of Fellowship until January 1, 1938. Back numbers of the JOURNAL are always obtainable by Fellows at 9d. a number.

CALENDAR.

*July 2, 1-7.30 P.M.*—British Delphinium Society's Show in the New Hall, and the National Sweet Pea Society's Show in the Old Hall. Fellow's Tickets admit to both these Shows.

*July 4.*—The Lily Group visits the gardens of Lord SWAYTHLING, Townhill Park, and the Rev. Prof. E. S. LYTTEL, Nyewoods, Chilworth. Full particulars are available from the Secretary on application.

*July 7, 1-7.30 P.M., and July 8, 10 A.M. to 5 P.M.*—Fortnightly Show of Lilies and flowers in season. On this occasion there will be a competition for the best hybrid Lily, which will be continued at the Show on July 21 (see below).

At 3.30 P.M. on *Tuesday, July 7*, there will be a Lily Group discussion in the Lecture Room of the New Hall on "Lilies Exhibited."

At 7 P.M., in the Restaurant of the New Hall, the Lily Group Dinner will be held, followed by a discussion on "Lily Hybrids I should like to raise."

*July 14, 1-7.30 P.M., and July 15, 10 A.M. to 5 P.M.*—National Carnation and Picotee Society's Show in the Old Hall. In the New Hall on *July 14* the Horticultural Society of the Ministry of Agriculture and Fisheries will stage their Annual Show. The hours of opening will be 12 noon to 7 P.M. Fellow's tickets admit free to this Show.

*July 21, 1-7.30 P.M., and July 22, 10 A.M. to 5 P.M.*—Fortnightly Meeting and Show. The competition for the best hybrid Lily, which was commenced at the Show on July 7, will be continued (see below). Also on this occasion there will be a competition for the Clay Cup, which is awarded for scented Roses (see special notice p. cxv).

At 3.30 P.M. on *Tuesday, July 21*, in the Lecture Room of the New Hall, there will be a lecture by Miss E. W. Jameson on "The Preservation of Vegetables for Home Use."

On *July 22 and 23*, from 2-4 P.M., there will be a practical demonstration at Wisley (weather permitting) on the summer pruning of fruit trees and shrubs (see special notice, p. cxv).

*July 24, 2.30-9 P.M., and July 25, 10 A.M. to 6 P.M.*—London Gardens Society's Exhibition of Flowers in the Old Hall.

*July 28.*—The Joint Border Carnation Committee will meet at 11.30 A.M. to inspect any specimens sent for their opinion, and the attention of Fellows is particularly drawn to this meeting as there is no Show on that occasion. Anyone wishing to submit specimens should fill up the appropriate entry form, obtainable from the Secretary beforehand, which should be handed to the Secretary of the Committee by 11.15 A.M. Of new varieties placed before the Joint Committee not fewer than two blooms must be shown. These varieties may be selected for trial at Wisley and/or receive Preliminary Commendation. For an Award of Merit not fewer than three blooms must be shown and three plants must be growing in the trials at Wisley. A First Class Certificate will be awarded only to a variety which has previously received an Award of Merit, and at least seven blooms must be shown. In all cases, whenever possible, a growing plant should also be shown. When it is desired to submit a variety for certificate in any week for which a meeting has not been arranged, the completed entry form must reach the Secretary of the Royal Horticultural Society, or the Secretary of the National Carnation and Picotee Society, by the Tuesday in the preceding week.

*Wednesday, August 5, 1-6 P.M.*—Fortnightly Show of flowers in season.

*August 18, 1-6 P.M.*—Fortnightly Meeting and Show. This is the occasion for the competition for the Foremarke Cup for Gladioli (see special notice, p. cxv).

At 3.30 P.M. a lecture will be given in the Society's Lecture Room in the New Hall by Mr. W. E. TH. INGVERSEN, on "Plant Hunting in the Caucasus."

*August 26 and 27, 2-4 P.M.*—Practical demonstration at Wisley (weather permitting) on the vegetative propagation of plants (see special notice, p. cxv).

LECTURE ON SUCCULENT PLANTS.

The Cactus and Succulent Society of Great Britain has arranged a lecture on *July 21* at 6 P.M., in the Lecture Room of the New Hall, on "Succulent Plants," to be given by Herr JACOBSEN, the Curator of the Botanic Gardens at Kiel. The lecture will be illustrated by lantern slides. Fellows who are interested in Succulents are invited to attend the lecture.

MEDAL OFFERED FOR NEW HYBRID LILY.

A Banksian Medal is offered for award to the amateur who exhibits at the Fortnightly Show on July 7 and 8, or the Fortnightly Show on July 21 and 22,

1936, the best hybrid Lily which has not received a Certificate of Preliminary Commendation, an Award of Merit, or a First-Class Certificate beforehand. All entries for this medal must be made on forms obtainable from the Secretary, by whom the completed forms should be received not later than by the first post on the morning of the Show, but earlier if possible.

#### COMPETITION FOR THE CLAY CUP FOR ROSES.

At the Show on July 21 (see Calendar) the annual competition for the Clay Challenge Cup for Roses will take place. This Cup, which was presented by Messrs. Clay in 1913, is offered to the raiser of a Rose of good form and colour, not in commerce before the current year, and possessing the true old-rose scent, such as may be found in the old Cabbage or Provence Rose, in 'General Jacqueminot,' 'Marie Baumann,' 'Duke of Wellington,' 'General McArthur,' etc. The scent known as "tea rose" is not, for the purposes of this competition, to be counted the true old-rose scent. Not more than three different varieties may be shown by one competitor. At least three and not more than six blooms or trusses of each variety will be required, together with a plant in flower and bud. The Cup will be awarded only once for the same Rose. Entries should be received not later than by the first post on Wednesday, July 15, on special forms which are obtainable from the Secretary.

#### PRACTICAL DEMONSTRATIONS AT WISLEY.

A demonstration on the summer pruning of fruit trees and shrubs will be given at Wisley on July 22 and 23, from 2 to 4 P.M. (weather permitting), and on August 26 and 27, at the same time, there will be one on the vegetative propagation of plants. Fellows who intend to be present at either of these demonstrations are asked to inform the Director, R.H.S. Gardens, Wisley, Ripley, Surrey, beforehand, mentioning which day they will attend, in order that adequate arrangements may be made.

#### FOREMARKE CHALLENGE CUP.

At the Fortnightly Show on August 18, the Foremarke Challenge Cup will be offered for award to trade and amateur growers for twenty spikes of named Gladioli in not less than ten varieties and not more than two spikes of any one variety. Entries for this cup should be sent, on the appropriate form obtainable from the Secretary, so as to arrive not later than by the first post on Wednesday, August 12.

#### HORTICULTURAL COLOUR CHART.

In the May number of the JOURNAL a special leaflet was inserted with regard to the proposed publication of a colour chart for horticultural purposes. As a result of this circular, more than 400 forms of application have been returned, which assures the publication of such a chart as is suggested in two volumes. Further applications from Fellows or Associates who would like to procure a copy of this work will be welcomed. A copy of the leaflet will be sent to anyone who may have mislaid the one circulated.

It is proposed to publish this colour chart in two volumes at a price not exceeding 10s. a volume, *plus* postage.

#### THE ROYAL SOCIETY OF BRITISH SCULPTORS.

The President of the Royal Society of British Sculptors, Sir William Reid Dick, R.A., desires to inform the Fellows and Associates of the Royal Horticultural Society that, should they be contemplating the introduction of sculpture into their gardens, he and his Society would be very pleased to offer advice.

#### PROPOSED EXPEDITION TO CHINA.

An expedition for the purpose of collecting seeds and plants in China is being organized for 1937.

China has produced a vast number of plants of many kinds particularly suitable for our gardens. Fellows who are interested in this expedition may obtain further particulars on application to the Secretary of the Society. The shares in the expedition will be in units of £10.

P. D. WILLIAMS MEMORIAL MEDAL.

The fund for establishing the P. D. Williams Memorial Medal is now closed, and it is with great gratification that we are able to report that the fund is sufficient to supply the desired medals.

The conditions under which the medals will be awarded are being considered, and the regulations will be published towards the end of the year.

EXAMINATIONS.

The number of candidates entering for the Society's General Examination for Senior and Junior candidates, and for the Teachers' Preliminary Examination in School and Cottage Gardening this year was approximately the same as in 1935, but it is satisfactory to find that the results show a considerable improvement over those of last year, and some of the papers showed a very high standard of knowledge.

In the General Examination for Seniors over 18, 288 candidates have been awarded Certificates and a Silver-Gilt Medal has been won by Mr. RONALD GARDNER, of the R.H.S. Gardens at Wisley, who was first. In the Junior examination a Silver Medal was gained by Miss PAMELA MARY UPHAM, c/o A.I.D. Parnall Aircraft Co., Yate, Glos., who was First, and 156 Certificates were awarded to successful candidates.

Three hundred and forty-nine candidates entered for the Teachers' Preliminary Examination in School and Cottage Gardening, and of these 253 were awarded Certificates. A Silver-Gilt Medal was won by Mr. RAYMOND JOHN GUTSELL, of Jeanette, Thorpe End Estate, Gt. Plumstead, Norwich, who was placed First. It is hoped that many of the teachers who have passed the Preliminary Examination will enter for the Advanced Section next year, and endeavour to gain this higher certificate.

The results of the Society's other examinations, namely, the Teachers' Advanced Examination, the National Diploma Examinations and the British Floral Art Diploma, will be announced later. In connexion with the British Floral Art Diploma examination Fellows are reminded that the work done by the candidates is always on view after the examination, and some of the bouquets, and table-decorations done by the candidates are well worth seeing. Florist's work as a career is on the increase, and the Diploma awarded to successful candidates should be very helpful.

The first examinations in horticulture for students attending Farm Institutes will be held in 1937. Particulars may be obtained from the Institutes direct.

The syllabus of the Society's examinations in horticulture and of the British Floral Art Diploma for 1937 will be available in the early autumn, and may be obtained from the Society's offices on application. The closing dates for entry will be announced in this JOURNAL and in the horticultural Press; a number of candidates were disappointed this year because their entries were too late for acceptance.

THE ROYAL AGRICULTURAL AND HORTICULTURAL SOCIETY OF  
SOUTH AUSTRALIA.

In view of the centenary of South Australia, the Society has presented a cup to the Royal Agricultural and Horticultural Society of South Australia, to be awarded for the best exhibit at their centenary show. Fellows will probably remember that a trophy was offered on the occasion of the centenary of Victoria in 1934.

CENTENARY OF THE FOUNDATION OF THE SOCIÉTÉ ROYALE LINNÉENNE  
DE BRUXELLES.

Dr. RENDLE, Professor of Botany to the Society, represented the Society at the festivities held on the occasion of the Centenary of the foundation of the Société Royale Linnéenne de Bruxelles and of the union of that Society with the Société Royale de Flore, and he was accorded a seat of honour at the various functions held.

On the morning of May 16 a flower show was held in the conservatories of the Botanic Gardens, which was opened by the King. In the afternoon a ceremonial meeting was held at the Palais des Academies, where the members were welcomed by the President and an historical account of the two Societies was read.

## ERLESTOKE PARK.

Further circulars in reference to Erlestoke Park have been received at the Society's offices, and the attention of Fellows is drawn to the statement already published in the JOURNAL, namely :

"In view of inquiries received and in order to avoid any misunderstanding on the part of the Fellows of the Royal Horticultural Society, the Council of the Society wishes it to be known that the appeal which has been made in connexion with Erlestoke Park, Wiltshire, has not been in any way made with the support, or under the auspices, of the Society."

## WHITE FLY PARASITE.

Where the parasite of the greenhouse white fly, *Encarsia formosa*, has been introduced it has proved extremely effective in checking the increase of this pest under glass, and large numbers have been distributed during the past few years. The demand has become so great that, in order to meet in a measure the cost of maintaining the parasite over the difficult winter months and packing and despatching it, the Council has fixed a charge of 2s. 6d. for a supply for a small house and 5s. for a large house, and applications for it should be accompanied by the sum named. It is useless to introduce it to houses until the average temperature is about 70° F. Early application should be made since the supply is limited, and it is hoped that Fellows who have found it successful will distribute it in their neighbourhood.

## INSPECTION OF GARDENS.

Many Fellows may not be aware of the terms under which their gardens can be inspected by the Society's Garden Inspector, and advice given thereon. They are set out below, and it will be seen that special arrangements can be made when Fellows living in the same district co-operate.

"The inspection of Gardens belonging to Fellows is conducted by a thoroughly competent Inspector from the Society, who reports and advises at the following cost, viz. : a fee of £3 3s. for one day (or £5 5s. for two consecutive days), together with all out-of-pocket expenses. No inspection may occupy more than two days, save by special arrangement. Should two or more Fellows residing in the same district, with their Gardens within easy reach of one another, desire to have the services of the Garden Inspector, arrangements will be made for such a combined inspection and the fee and expenses divided by consent of those concerned. Fellows wishing for the services of an Inspector are requested to give at least a week's notice and choice of two or three days, and to indicate the most convenient railway station and its distance from their Garden. Gardens can only be inspected at the written request of the owner."

## WISLEY IN JULY.

During July in the trial grounds on the hill near the Entrance Gate may be seen a number of different flowers amongst which visitors can make notes and draw comparisons between varieties of Godetia, Sweet Pea, Viscaria, and Border Carnation, which constitute the principal floral trials for the year, and in addition there is the collection of hardy Fuchsias which grow here all the year round. Delphiniums will probably be almost over, but the border of annual plants near by, which last year proved a source of great attraction, should be coming to its maximum beauty. On the hillside also the long borders of Roses of many varieties, planted during the past winter, should still give blooms of varied types and colour, although the first flush of flowers will be past. The trial of Gladioli is to be found near the herbaceous border, on the way from the glasshouses to Seven Acres.

In the Alpine House Campanulas provide the chief display at this late season for plants grown under these conditions, but in addition Wahlenbergias, Gentians, *Thymus membranaceus*, *Pratia Treadwellii*, *Digitalis dubia*, and species of the lovely genus *Cyananthus* will be on view. On the Rock Garden Acantholimon, Campanulas, Geraniums, Hypericums, late species of Primula, *Anagallis collina*, Linums, Oenotheras, and many other plants will indicate that the season of floral beauty here is far from past.

The Wild Garden can show at different periods of this month a great variety of Lilies, including *giganteum*, *Szovitsianum*, *canadense*, *cernuum*, *superbum*, *Willmottiae*, and others. Meconopsis are also to be seen, *Orchis foliosa* in a

moist spot by the side of a ditch, *Primula Bulleyana*, *P. microdonta*, and *P. Florindae*, the tall Campanulas *lactiflora* and *latifolia* are there, while among the shrubby inhabitants of this part are *Chionanthus virginica*—the North American Fringe Tree—the fine pink *Kalmia latifolia*, *Genista virgata*, and possibly a few late species and hybrids of *Rhododendron*.

After a period of rest from flowers for a month or two the Heath Garden will again begin to show some colour: *Daboecia polifolia* in two shades of purple, besides white; *Ericas cinerea*, *Tetralix*, and the Cornish *vagans* in their several sorts, while the Corsican *E. terminalis (stricta)* opens its long season. Yellow will be provided by the low-growing shrub *Adenocarpus*, with the sweetly-scented *Genista cinerea*, and *Spartium junceum*, the Spanish broom, perhaps the last of the family to bloom.

Of the shrubs in Seven Acres, Buddleias, certain *Cotoneaster* species, with Escallonias, Spiraeas, and the varieties of *Hypericum patulum* will be making a good display, and visitors to Howard's Field (beyond the Pinetum) in the earlier part of the month will find *Cistus* and many species of *Rosa* to interest them.

The herbaceous border should by this time begin to look gay with its great selection of plants of all kinds, and nearby can be found collections of *Iris* species, *Hemerocallis* and *Kniphofia* for those whose tastes are more specialized.

Within the large Temperate house many varieties of *Fuchsia* are now in flower, together with *Pelargoniums*, the attractive tall, shrubby *Pentstemon antirrhinoides*, and climbers, including *Ipomaea Learii*, with sky-blue flowers, and *Bougainvillea* "Mrs. Butt." The half-hardy house, nearest to the Laboratory, may show the "climbing Dahlia" (*Hidalgoa Wercklei*), the brilliant blue *Leschenaultia*, and the pink-flowered, bushy *Gilia californica*, as well as other plants requiring some winter protection.

#### THE GARDENS AT BODNANT.

Fellows visiting North Wales will be glad to know that the Gardens at Bodnant, Tal-y-Cafn, North Wales, are, by Lord ABERCONWAY'S permission, open to Fellows of the Society without charge on Tuesday and Friday afternoons throughout the summer from 2 to 5 P.M.

## GENERAL MEETINGS.

MAY 5 AND 6, 1936.

In addition to the usual fortnightly meeting of May 5 and 6, the account of which appears under the heading of the various Committees, a special Show which had been arranged jointly by our Society and the Alpine Garden Society in connexion with the Conference on Alpine Plants, was held.

The awards made to non-competitive groups are given below, those to the winners in competitive classes will appear in the Report of the Conference which is in active preparation.

The Conference was held as announced in the May issue of the JOURNAL on May 5, 6 and 7. The papers read and the discussions which followed will be published in a special Report under the title of "Rock Gardens and Rock Plants."

## EXHIBITION OF ROCK-GARDEN AND ALPINE-HOUSE PLANTS.

MAY 5-6, 1936.

*Chief Awards in the Competitive Classes.*

*Class 1.*—Twelve Species and/or Hybrids, in bloom, one pot or pan of each. Not fewer than three genera to be represented. Other things being equal, preference will be given to the exhibit representative of the greatest number of genera.

*First Prize, Sewell Medal and £6.*

To Mark Fenwick, Esq., Abbotswood, Stow-on-the-Wold, Glos.

*Second Prize, Silver Banksian Medal and £4 10s.*

To the Lord Aberconway, C.B.E., V.M.H., Bodnant, Tal-y-Cafn, N. Wales.

*Third Prize, Banksian Medal and £3.*

To Mrs. Dyson Perrins, Davenham, Malvern.

*Fourth Prize, £1 10s.*

To Dr. P. L. Giuseppi, Felixstowe.

*The Farrer Memorial Medal*, presented by the Alpine Garden Society, for the best pot or pan of an Alpine Plant shown in the competitive classes for amateurs was awarded to G. P. Baker, Esq., V.M.H., Sevenoaks, for *Daphne rupestris grandiflora*.

*Awards to Non-competitive Groups.*

*Silver-gilt Banksian Medal.*

To Mark Fenwick, Esq., Abbotswood, Stow-on-the-Wold, for an exhibit of alpine-house plants.

To Messrs. Clarence Elliott, Stevenage, for an exhibit of rock-garden plants.

To Messrs. W. E. Th. Ingwersen, East Grinstead, for an exhibit of rock-garden and alpine-house plants.

*Silver Flora Medal.*

To Mr. W. J. Marchant, Wimborne, for an exhibit of rock-garden plants.

To Mr. G. H. Dalrymple, Bartley, for an exhibit of dwarf Conifers.

To Messrs. Hillier, Winchester, for an exhibit of rock-garden plants.

To the Brookside Nurseries, Headington, for an exhibit of rock-garden plants.

*Silver Banksian Medal.*

To Messrs. M. Prichard, Christchurch, for an exhibit of rock-garden plants.

To Messrs. J. Waterer, Sons & Crisp, Twyford, for an exhibit of rock-garden plants.

To Messrs. Casburn, Bedford & Page, Trumpington, for an exhibit of rock-garden plants.

*Flora Medal.*

To Mr. G. E. Welch, Cambridge, for an exhibit of rock-garden plants.

To H. F. R. Miller, Esq., Sevenoaks, for an exhibit of alpine-house plants.

To Mr. R. Kaye, Silverdale, Lancs., for an exhibit of alpine-house plants.

To The Alpine Nurseries, West Moors, Wimborne, for an exhibit of rock-garden plants.

*Banksian Medal.*

To Messrs. J. Robinson, Eltham, for an exhibit of rock-garden plants.  
 To Messrs. W. H. Rogers, Southampton, for an exhibit of rock-garden plants.  
 To Mr. W. Wells, jr., Merstham, for an exhibit of rock-garden plants.  
 To Mr. Ernest Ladhams, Elstead, for an exhibit of rock-garden plants.  
 To Messrs. Maxwell & Beale, Broadstone, Dorset, for an exhibit of rock-garden plants.

To Mr. A. Hansen, New Barnet, for an exhibit of alpine-house plants.  
 To The Hocker Edge Gardens, Cranbrook, for an exhibit of rock-garden plants.  
 To Mr. Stuart Boothman, Maidenhead, for an exhibit of alpine-house plants.  
 To Messrs. C. Engelmann, Saffron Walden, for an exhibit of *Sempervivums*.  
 To Messrs. the Chez Nous Nurseries, Newick, for an exhibit of alpine-house plants.

To Messrs. Barr, Covent Garden, for an exhibit of rock-garden plants.  
 To Messrs. Baker, Codsall, for an exhibit of rock-garden plants.  
 To The Alpine Nurseries, West Moors, Wimborne, for an exhibit of alpine-house plants.

*The Farrer Memorial Medal* for the best exhibit of rock-garden or alpine-house plants, shown by a horticultural trader was awarded to Messrs. Clarence Elliott, Stevenage.

AWARDS MADE TO EXHIBITS OF PAINTINGS, DRAWINGS AND PHOTOGRAPHS OF ROCK-GARDEN OR ALPINE-HOUSE PLANTS.

*Silver Grenfell Medal.*

To Mr. H. A. Thomerson, Loughton, for an exhibit of drawings of rock-garden plants.

*Grenfell Medal.*

To Mr. E. W. Atkinson, Chapel Allerton, for an exhibit of water-colour drawings of alpine plants.

To Lt.-Commander J. P. W. Furse, R.N., Alverstoke, for an exhibit of water-colour paintings of alpine plants.

To Mr. E. D. Doncaster, Ringwood, for an exhibit of photographs of alpine plants.

To Mr. D. J. Merrett, East Grinstead, for an exhibit of photographs of rock-garden plants.

MAY 5, 1936.

**SCIENTIFIC COMMITTEE.**—Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and seven other members present.

*Longevity of Tomato seeds.*—Mr. Hales showed a pot of seedlings of Tomato raised from seed known to be sixteen years of age. Apparently all had germinated.

*Tulip rogue?*—Dr. Barnes showed flowers of a double yellow Tulip of ordinary type which occurred under the following circumstances: Bulbs of a batch of Parrot Tulips which had been grown for several years were lifted in the summer of 1933 and not replanted. One bulb was found still sound in autumn 1934 and was planted; it gave a double yellow flower and this year the two shown. A possible explanation lies in the inclusion of a bulb in the 1933 lifting which had not flowered.

*Various plants.*—*Meconopsis Delavayi*, a small species from W. China; *Pelargonium reflexum* collected in S. Africa by Mrs. Milford; and a species of *Cynoglossum* from N. Africa shown by Mrs. Sanderson of Chalfont St. Giles, which proved to be *C. cheirifolium*, were before the Committee.

**FRUIT AND VEGETABLE COMMITTEE.**—Mr. E. A. BUNYARD, F.L.S., in the Chair, and eleven other members present.

There was no business before the Committee on this occasion.

**FLORAL COMMITTEE A.**—Mr. J. M. BRIDGEFORD in the Chair, and eighteen other members present.

**Awards Recommended:—**

*Silver Flora Medal.*

To Messrs. Allwood, Haywards Heath, for Carnations.

To Messrs. Kelway, Langport, for Tree Pæonies.



*Silver Banksian Medal.*

- To Messrs. B. R. Cant, Colchester, for Roses.  
 To Mr. J. Douglas, Great Bookham, for Auriculas.  
 To Messrs. Engelmann, Saffron Walden, for Carnations and Pansies.  
 To Messrs. Napier, Taunton, for Carnations.

*Flora Medal.*

- To Messrs. S. Low, Enfield, for Carnations.  
 To Messrs. Pearson, Lowdham, for Schizanthus.

*Banksian Medal.*

- To Messrs. Allwood, Haywards Heath, for *Dianthus Allwoodii*.  
 To Mr. F. J. Bell, Whitley Bay, for Violas.  
 To Messrs. Boekee, Wisbech, for Anemones.  
 To Mr. G. H. Dalrymple, Bartley, for Auriculas.  
 To Messrs. Dobbie, Edinburgh, for Violas.  
 To Messrs. Simmons, Finchley, for Violas.  
 To Messrs. Wall, Bath, for Aquilegias.

**Other Exhibits.**

- Messrs. Cheal, Crawley : Dahlias.  
 Messrs. Kelway, Langport : Tree Pæony ' Langport Lad ' (to be seen again) ;  
 Tree Pæony ' Duchess of Gloucester.'  
 Mr. G. Kerswill, Exeter : Pelargonium (to be seen again).  
 Mrs. A. Fremantle, Penn : Polyanthus.  
 Messrs. Morse, Norwich : Rose ' Golden Aachen.'  
 Mrs. M. Pope, Chippenham : Rose ' Ramona.'  
 Messrs. Unwin, Histon : Tropæolums ' Burpee's super double Scarlet ' and  
 ' Burpee's super double Yellow.'

**FLORAL COMMITTEE B.**—Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and sixteen other members present.

**Awards Recommended :—***Silver Banksian Medal.*

- To Messrs. Hillier, Winchester, for flowering trees and shrubs.

*Flora Medal.*

- To Messrs. Cheal, Crawley, for flowering trees and shrubs.  
 To Messrs. Stuart Low, Enfield, for greenhouse shrubs and plants.  
 To Messrs. Russell, Richmond, for greenhouse shrubs and plants.

*Banksian Medal.*

- To Messrs. Burkwood & Skipwith, Kingston, for flowering shrubs.  
 To Messrs. Cuthbert, Cranleigh, for Azaleas.  
 To Messrs. H. J. Haskins, Bournemouth, for Clematis.  
 To Messrs. Neale, Worthing, for Gazanias and succulents.

*Award of Merit.*

- To *Anemone Pulsatilla* ' Crimson Beauty ' as a hardy flowering plant (votes 9 for, 4 against), from Lady Beatrix Stanley, Market Harborough. See p. 290.  
 To *Nomocharis aperta* as a hardy flowering plant (votes 11 for), from Andrew Harley, Esq., Dollar, Perthshire. See p. 293.  
 To *Primula ingens* as a hardy flowering plant (votes unanimous), from Lord Aberconway, Bodnant. See p. 294.  
 To *Watsonia stenosphon* as a flowering plant for the cool greenhouse (votes unanimous), from T. T. Barnard, Esq., Wareham. See p. 297.

**Other Exhibits.**

- T. T. Barnard, Esq., Wareham : *Wachendorfia paniculata*, *Gladiolus grandis*,  
*Satyrion coricifolium*, *Anomalesia cunonia*.  
 Miss E. A. Britton, Tiverton : *Ceanothus* sp.  
 Col. S. R. Clarke, C.B., Haywards Heath : K.W. 012587 H.  
 Colesbourne Gardens, Cheltenham : Fritillarias.  
 Mark Fenwick, Esq., Stow-on-the-Wold : *Uvularia grandiflora*.  
 Lt.-Col. C. H. Grey, D.S.O., Cranbrook : *Chlidanthus fragrans* var. *Ehrenbergii*.  
 F. J. Hanbury, Esq., East Grinstead : *Vaccinium* sp.  
 Collingwood Ingram, Esq., Benenden : *Sambucus* sp.  
 Mrs. H. Milford, Chedworth : *Pelargonium reflexum*.  
 Mrs. Maurice Pope, Chippenham : *Lathyrus pubescens*.  
 Mr. R. Colpoys Wood, West Drayton : shrubs.

**ORCHID COMMITTEE.**—Sir JEREMIAH COLMAN, Bt., in the Chair, and fourteen other members present.

**Award Recommended :—**

*Award of Merit.*

To *Cymbidium* × 'Altair,' Hanbury's var. (*Pauwelsii* × 'Pipit') (votes 9 for, 4 against), from F. J. Hanbury, Esq., Brockhurst, East Grinstead.

**Other Exhibits.**

Messrs. Armstrong & Brown, Tunbridge Wells : a group.

Messrs. Charlesworth, Haywards Heath : a group.

Messrs. J. & A. McBean, Cooksbridge : a group.

Mrs. W. F. Higgins, Croydon : *Masdevallia simula*.

**NARCISSUS AND TULIP COMMITTEE.**—Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and nine other members present.

**Awards Recommended :—**

*Silver-gilt Banksian Medal.*

To Messrs. Barr, 12 King Street, Covent Garden, for Daffodils and Tulips.

To the Bronwylla Fruit and Bulb Farm, St. Asaph, for Daffodils.

*Silver Flora Medal.*

To Messrs. R. H. Bath, Wisbech, for Daffodils.

*Silver Banksian Medal.*

To Messrs. Daniels, Norwich, for Daffodils and Tulips.

To Messrs. J. R. Pearson, Lowdham, for Daffodils.

To Messrs. Wakeley, Bankside, S.E. 1, for Daffodils.

*First Class Certificate.*

To *Narcissus* 'Brimstone' as a variety for show purposes (votes 6 for) from Mr. W. B. Cranfield. See p. 293.

*Award of Merit.*

To *Narcissus* 'Lily of Rotherside' as a variety for show purposes (votes 8 for), from Messrs. Bath. See p. 293.

To *Narcissus* 'Glynver' as a variety for show purposes (voting unanimous), from Mr. J. L. Richardson. See p. 293.

**Selected for Trial.**

The following were selected for trial at Wisley as varieties for garden decoration :—

*Narcissus* 'Cresta,' shown by Mr. W. A. Watts, The Welsh Bulb Fields, St. Asaph.

*Narcissus* 'Happy Easter,' shown by Messrs. R. H. Bath.

*Narcissus* 'Foresight,' shown by Mr. F. A. Secrett, Holly Lodge Farm, Walton-on-Thames.

The following were selected for trial at Kirton as varieties for cutting from the open for market :—

*Narcissus* 'Foresight,' shown by Mr. F. A. Secrett.

*Narcissus* 'Nanette,' shown by Mr. W. A. Watts.

The report of the Sub-Committee on the Daffodil Trials at Wisley was recommended for adoption. See p. 300.

**JOINT ROCK GARDEN COMMITTEE.\***—Major F. C. STERN, M.C., in the Chair, and sixteen other members present.

**Awards Recommended :—**

*First Class Certificate.*

To *Gentiana verna* var. *angulosa* as a flowering plant for the rock garden and alpine house (votes 9 for, 4 against), from T. T. West, Esq., Merstham. See p. 291.

*Award of Merit.*

To *Androsace cylindrica* × *hirtella* as a flowering plant for the alpine house (votes 12 for), from Dr. R. Bevan, Henley-on-Thames. See p. 290.

To *Aquilegia viridiflora* as a flowering plant for the rock garden (votes 12 for), from the Rev. T. Buncombe, Black Torrington. See p. 290.

To *Fritillaria liliacea* as a flowering plant for the rock garden and alpine house (votes unanimous), from Dr. P. L. Giuseppi, Felixstowe. See p. 291.

To *Omphalogramma Delavayi* as a flowering plant for the rock garden and alpine house (votes 13 for), from Lord Aberconway, Bodnant. See p. 293.

\* This was the first meeting of this newly constituted Committee.

To *Omphalogramma Rockii* as a flowering plant for the rock garden and alpine house (votes 10 for), from J. T. Renton, Esq., Perth. See p. 294.

To *Phyllodoce* × *hybrida* as a flowering shrub for the rock garden and alpine house (votes 11 for), from Mr. W. J. Marchant, Wimborne. See p. 294.

To *Primula Gambeliana* as a flowering plant for the rock garden and alpine house (votes 9 for, 1 against), from Lord Aberconway, Bodnant. See p. 294.

To *Primula longiflora* as a flowering plant for the rock garden and alpine house (votes 12 for), from Dr. R. Bevan, Henley-on-Thames. See p. 295.

To *Primula sinoplantaginea* as a flowering plant for the rock garden and alpine house (votes 8 for), from R. B. Cooke, Esq., Corbridge. See p. 295.

To *Sarcocapnos enneaphylla* as a flowering plant for the alpine house (votes 7 for), from the Director, R.H.S. Gardens, Wisley. See p. 296.

To *Weldenia candida* as a flowering plant for the alpine house (votes 14 for), from Dr. P. L. Giuseppe, Felixstowe. See p. 297.

#### *Preliminary Commendation.*

To *Campanula rupicola* as a flowering plant for the rock garden and alpine house (votes unanimous), from Dr. P. L. Giuseppe, Felixstowe.

To *Meconopsis grandis* × *integrifolia* as a flowering plant for the rock garden and alpine house (votes 7 for, 1 against), from Mrs. Crewdson, Kendal.

#### *Cultural Commendation.*

To Mrs. G. Anley, Woking, for a specimen plant of *Saxifraga exarata* var. *pyrenaica*.

#### *Other Exhibits.*

Lord Aberconway, Bodnant: *Primula rotundifolia*, *P. eburnea*, *P. atrodentata*, *P. sapphirina*.

Miss E. A. Britton, Tiverton: *Erysimum capitatum*.

R. B. Cooke, Esq., Corbridge: *Oxalis acetosella* var. *rubra*.

H. C. Crook, Esq., Bromley: *Campanula alpina*.

Dame Alice Godman, Horsham: *Ornithogalum* sp.

Mrs. A. N. Griffith, Cambridge: *Ramondia Nathaliae*, *Corydalis himalaica*.

Dr. P. L. Giuseppe, Felixstowe: *Phyllodoce nipponica*, *Jasminum Parkeri*, *Phlox* × *Stellaria*, *Wulfenia Baldatii*, *Primula Rockii*, *Centaurea rupicola*, *C. macrorrhiza*, *Campanula rupicola* var. *glabrescens*.

Mrs. Robert Lukin, Burghfield Common: *Sedum* sp., *Anthyllis tomentosa*, *Calendula* sp.

J. T. Renton, Esq., Perth: *Azorella caespitosa*, *Meconopsis Delavayi*.

Messrs. Rogers, Southampton: *Cupressus obtusa caespitosa*, *C. obtusa juniperoides*, *C. obtusa intermedia*, *C. obtusa flabelliformis*, *C. obtusa spiralis*, *C. Lawsoniana Rogersii*.

T. T. West, Esq., Merstham: *Pyxidanthera barbulata*, *Ramondia Nathaliae* alba.

Dr. G. C. Williamson, Guildford: *Crocidium multicaule*.

**JOINT SWEET PEA COMMITTEE.**—Mr. G. W. LEAK, V.M.H., in the Chair, and twelve other members present.

#### *Exhibits.*

Early Flowering Sweet Peas: 'Early Sunray,' 'Early Mrs. Hoover,' 'Early Chime,' 'Early Memory,' 'Early Peachblow,' 'Early Oriental,' 'Early Triumph,' 'Early Harmony,' Seedlings 1, 34, E. 35, and F. 35, shown by Mr. Douglas Foxwell of Balcombe, Sussex. The Committee desired to see these again.

Mr. J. Stevenson of Wimborne showed the following varieties for comparison with the above: 'Gold Coin,' 'Melrose,' 'Giant Rose,' 'Giant Pink,' 'Tit Bit,' 'Peaches,' 'Cinnamo,' 'Exquisite,' 'The Premier' and 'Bon Bon.'

**JOINT RHODODENDRON COMMITTEE.**—Mr. J. B. STEVENSON in the Chair, and nine other members present.

#### *Exhibits.*

Mr. R. G. Cuthbert, Cranleigh, Surrey: *Rhododendron* (Azalea) × 'Mrs. G. A. van Noordt' (*R. mollis* × *R. sinensis*).

Dame Alice Godman, Horsham, Sussex: *R. fragrantissimum*.

Lord Aberconway, Bodnant, N. Wales: *R. K.W.* 7717 (series *Maddenii*), and *R.* × *Hiraeathlyn* (*R. haemotodes* × *R. Griffithianum*).

Lt.-Col. G. H. Loder, Handcross, Sussex: *R. galactinum*.

F. J. Hanbury, Esq., Brockhurst, East Grinstead: *R. Augustinii*.

The Director, Royal Botanic Gardens, Kew: *R. scabrum*. (This plant arrived too late to be put before the Committee.)

CHELSEA SHOW.

MAY 20, 21 AND 22, 1936.

Held in the Grounds of the Royal Hospital, Chelsea.

LIST OF AWARDS.

*The Sherwood Challenge Cup*, for the most meritorious exhibit in the Show.

To Messrs. R. Bolton, Birdbrook, nr. Halstead, Essex, for an exhibit of Sweet Peas.

*The Cain Challenge Cup*, offered for award for the best exhibit shown by an amateur.

To Sir Jeremiah Colman, Bt., V.M.H., Gatton Park, Reigate, Surrey (Orchid-grower, Mr. B. F. Perfect), for an exhibit of Orchids.

*Orchid Challenge Cup*, for the best group of Orchids shown by an amateur in a space not exceeding 100 sq. feet.

To N. Prinsep, Esq., Pevensey Bay (gr. Mr. A. Merry).

*Orchid Challenge Cup*, for the best group of Orchids shown by an amateur in a space not exceeding 60 square feet.

To M. L. Wells, Esq., Chiddingfold (gr. Mr. R. Buckman).

*Sutton Vegetable Cup*, for the best group of vegetables shown by an amateur.

To Cheadle Royal Mental Hospital (gr. Mr. C. E. Mason).

*Orchid Trophy*, for the best twelve Orchids exhibited by an amateur.

To E. R. Ashton, Esq., Tunbridge Wells (gr. Mr. B. P. Dunster).

*Gold Medals.*

To Messrs. H. G. Alexander, Tetbury, Glos., for Orchids.

To Messrs. Charlesworth, Haywards Heath, for Orchids.

To Messrs. McBean, Cooksbridge, nr. Lewes, for Orchids.

To Messrs. Laxton Bros., Bedford, for Strawberries.

To Messrs. Barr, King Street, Covent Garden, for Tulips and other bulbous plants.

To Mr. R. Hancock, 110 Sloane Street, S.W. 1, for rock garden.

To Messrs. R. Wallace, Tunbridge Wells, for rock garden.

To Mr. G. G. Whitelegg, Chislehurst, for rock garden.

To Percy S. Cane, Esq., 12 Cliveden Place, S.W. 1, for garden.

To Messrs. J. Cheal, Crawley, for formal garden.

To Messrs. J. Waterer, Sons & Crisp, Twyford, for Iris garden.

To Messrs. Bees, Sealand Nurseries, Chester, for mixed group of herbaceous plants and shrubs.

To Sir Jeremiah Colman, Bt., V.M.H., Gatton Park, Reigate (Orchid grower, Mr. B. F. Perfect), for Orchids.

To Messrs. Allwood, Haywards Heath, for Carnations and Pinks.

To Messrs. Blackmore & Langdon, Bath, for a group of Begonias, Delphiniums and Gloxinias.

To Messrs. R. Bolton, Birdbrook, nr. Halstead, for Sweet Peas.

To Messrs. Carters' Tested Seeds, Raynes Park, S.W., for a mixed group of Sweet Peas and other florists' flowers.

To Messrs. Alex. Dickson, Newtownards, for Roses.

To Messrs. C. Engelmann, Saffron Walden, for Carnations.

To Messrs. Sutton, Reading, for greenhouse plants from seeds.

To James A. de Rothschild, Esq., D.C.M., M.P., Aylesbury (gr. Mr. G. F. Johnson), for Anthurium hybrids.

To Lionel de Rothschild, Esq., O.B.E., V.M.H., Exbury (grs. Mr. F. Hanger and Mr. R. Findlay, jnr.), for Hippeastrum hybrids.

To Messrs. A. Charlton, Rotherfield, for trees and shrubs including Japanese Maples.

To Messrs. R. Wallace, Tunbridge Wells, for a mixed group of Lilies, Rhododendrons, Azaleas, Irises and bulbous plants.

*Silver Cups.*

To Messrs. Armstrong & Brown, Tunbridge Wells, for Orchids.

To Messrs. Sanders, St. Albans, for Orchids.

To Messrs. R. H. Bath, Wisbech, for Tulips.

To Messrs. Clarence Elliott, Stevenage, for rock garden.

To Messrs. Wm. Wood, Taplow, for rock garden.

To Messrs. J. Burley, Upper Richmond Road, Putney, for formal garden.

To N. Prinsep, Esq., The Boxes, Pevensey Bay (gr. Mr. A. Merry), for Orchids.

To M. L. Wells, Esq., Old Dog Kennel Cottage, Chiddingfold (gr. Mr. R. Buckman), for Orchids.

To Messrs. Chaplin Bros., Waltham Cross, for Roses.

To Lionel de Rothschild, Esq., O.B.E., V.M.H., Exbury, Southampton (Orchid grower, Mr. B. Hills), for Orchids.

To Messrs. Hillier, Winchester, for a mixed group of trees and shrubs and Lilies.

To J. Pierpont Morgan, Esq., LL.D., D.C.L., D.Sc., Wall Hall, Watford, Herts (gr. Mr. F. A. Steward) for stove and greenhouse plants.

To Messrs. L. R. Russell, Richmond, for stove and greenhouse plants.

To Messrs. J. Waterer, Sons & Crisp, Bagshot, for Rhododendrons and Japanese Maples.

*Silver-gilt Flora Medals.*

To Messrs. Black & Flory, Slough, for Orchids.

To Messrs. Dobbie, Edinburgh, for Tulips.

To Messrs. J. R. Pearson, Lowdham, for Tulips.

To Hocker Edge Gardens, Cranbrook, for rock garden.

To Mr. Gavin Jones, Letchworth, for rock garden.

To Messrs. Gilliam, Croydon, for formal garden.

To Messrs. Hillier, Winchester, for garden.

To Mr. James MacDonald, Harpenden, for grass garden.

To Messrs. G. Bunyard, Maidstone, for Irises.

To Messrs. J. Waterer, Sons & Crisp, Twyford, for a mixed group of herbaceous plants, Tulips and Lilies.

To F. J. Hanbury, Esq. (Orchid grower, Mr. S. Farnes), East Grinstead, for Orchids.

To Messrs. Ben. R. Cant, The Old Rose Gardens, Colchester, for Roses.

To Messrs. The Donard Nursery Co., Newcastle, co. Down, for shrubs.

To Messrs. G. Jackman, Woking, for Clematis hybrids.

To Messrs. J. Waterer, Sons & Crisp, Bagshot, for trees and shrubs.

To Messrs. W. A. Constable, Tunbridge Wells, for Lilies.

*Silver-gilt Banksian Medals.*

To The Stuart Low, Co., Jarvis Brook, Crowborough, for Orchids.

To Messrs. H. Prins, Wisbech, for Tulips.

To Messrs. Bedford & Page, Trumpington, Cambridge, for rock garden.

To Messrs. Pulham, 71 Newman Street, W. 1, for rock garden.

To Mr. I. G. Walker, Godstone Grinstead Gardens, South Godstone, for rock garden.

To Messrs. Garden Makers, 65 Baker Street, W. 1, for Japanese garden.

To Messrs. Hewitt, Stratford-on-Avon, for a mixed group of Delphiniums and *Meconopsis betonicifolia*.

To Mr. Amos Perry, Enfield, for a mixed group of Tree Paeonies, Ferns, Aquatics, herbaceous and bulbous plants.

To Mr. Elisha J. Hicks, Hurst, Reading, for Roses.

To Messrs. E. Webb, Stourbridge, for a mixed group of greenhouse plants and annuals.

To Messrs. Dartington Hall Ltd., Totnes, for trees and shrubs.

To Messrs. Knap Hill Nursery, Woking, for Rhododendrons and Azaleas.

To Messrs. The Stuart Low Co., Enfield, for a mixed group of Australian shrubs, Hippeastrum hybrids and other greenhouse plants.

To Mr. R. C. Notcutt, Woodbridge, for shrubs.

To Messrs. Pennell, Lincoln, for a mixed group of Clematis hybrids and Statice.

To Messrs. L. R. Russell, Richmond, for trees and shrubs including climbers.

To Messrs. L. R. Russell, Richmond, for Azaleas.

*Silver Flora Medals.*

To Messrs. Mansell & Hatcher, Rawdon, for Orchids.

To The Rev. Canon H. Rollo Meyer, Ditcheat, Somerset (gr. Mr. J. P. Izzard), for Tulips.

To Messrs. Wakeley, 74 Bankside, S.E. 1, for Tulips.

To Messrs. W. E. Th. Ingwersen, Gravetye, E. Grinstead, for rock garden.

To The Orpington Nurseries Co., Orpington, for Irises.

To Messrs. M. Prichard, Christchurch, for a mixed group of Lupins and other herbaceous plants.

To Messrs. Wm. Wood, Taplow, for herbaceous plants.

To Messrs. Bakers, Codsall, for a mixed group of Delphiniums, Lupins, and other herbaceous plants.

To Ashington Nurseries, Ashington, for Carnations.

To Messrs. Frank Cant, Braiswick Rose Gardens, Colchester, for Roses.

- To Messrs. Frank Cant, for Polyanthus Roses.
- To Messrs. Dobbie, Edinburgh, for Sweet Peas.
- To Mr. C. Gregory, Chilwell, Nottingham, for Roses.
- To Messrs. Gurteen & Ritson, Three Bridges, Sussex, for a mixed group of Roses and shrubs.
- To Messrs. Hillier, Winchester, for Rose species.
- To Messrs. Bakers, Codsall, for Azaleas and other shrubs.
- To Messrs. J. Cheal, Crawley, for trees and shrubs.
- To Mr. H. Hemsley, Crawley, for trees and shrubs.
- To Messrs. J. Peed, West Norwood, for stove and greenhouse plants.
- To Mr. G. H. Dalrymple, Bartley, Southampton, for mixed group of Primulas, Meconopsis and Auriculas.
- To Messrs. J. Waterer, Sons & Crisp, Twyford, for rock-garden plants.
- To Messrs. M. Prichard, Christchurch, for rock-garden plants.

*Silver Banksian Medals.*

- To Messrs. Harry Dixon, Spencer Park Nursery, S.W. 18, for Orchids.
- To Messrs. Daniels, Norwich, for Tulips.
- To Messrs. Conways, Halifax, for rock garden.
- To Mr. E. Dixon, Southfields Nursery, S.W. 19, for rock garden.
- To Mr. G. B. Ellis, 53 Haymarket, S.W. 1, for rock garden.
- To Messrs. Redgrove & Patrick, Seal, Sevenoaks, for rock garden.
- To Messrs. Wm. Cutbush, Barnet, for Rose garden.
- To Messrs. Barr, Covent Garden, for herbaceous plants.
- To Mr. F. J. Bell, St. Paul's Nurseries, Whitley Bay, for Pansies and Violas.
- To Messrs. Dobbie, Edinburgh, for Dahlias.
- To Mr. James Douglas, Gt. Bookham, for border Carnations.
- To Mr. James Douglas, Gt. Bookham, for Auriculas.
- To Messrs. C. Engelmann, Saffron Walden, for Pansies.
- To Messrs. Robert Green, Crawford Street, W. 1, for window boxes.
- To Messrs. Kelway, Langport, for a mixed group of Paeonies, Pyrethrums and Delphiniums.
- To Mr. Ernest Ladhams, Elstead Nurseries, nr. Godalming, for a mixed group of herbaceous plants, shrubs and Aquatics.
- To Mr. Stuart Ogg, Swanley, for Dahlias.
- To Mr. J. B. Riding, Chingford, for Dahlias.
- To Mr. G. G. Whitelegg, Chislehurst, for Irises.
- To Lady Carr, Wonford, Walton-on-the-Hill (gr. Mr. J. T. Doe), for Carnations.
- To Messrs. Dobbie, Edinburgh, for Antirrhinums.
- To The Stuart Low Co., Enfield, Middx., for Carnations.
- To Messrs. Napiers, Taunton, for Carnations.
- To Messrs. Watkins & Simpson, Drury Lane, W.C. 2, for a mixed group of Calceolarias, Ranunculus and Nierembergias.
- To Messrs. Wheatcroft, Ruddington, for Roses.
- To Messrs. Burkwood & Skipworth, Kingston, for shrubs.
- To Mr. R. G. Cuthbert, Cranleigh, for Azaleas.
- To Messrs. Hollamby's Nurseries, Groombridge, for trees and shrubs.
- To Mr. R. C. Notcutt, Woodbridge, for Lilacs.
- To Messrs. G. Reuthe, Keston, for a mixed group of Rhododendrons and other shrubs.
- To Messrs. R. Wallace, Tunbridge Wells, for Rhododendrons, Azaleas and other shrubs.
- To Messrs. Wm. Wood, Taplow, for shrubs.
- To Brookside Nurseries, Headington, for rock-garden plants.
- To Hocker Edge Gardens, Cranbrook, for alpine house plants.
- To Mr. Amos Perry, Enfield, for Aquatics.

*Silver-gilt Knightian Medal.*

- To Messrs. Fogwills, Guildford, for vegetables.

*Silver Knightian Medal.*

- To The Cheadle Royal Mental Hospital, Cheadle (gr. Mr. C. E. Mason), for vegetables.

*Flora Medals.*

- To Messrs. Walter Blom, Cranleigh, for Tulips.
- To Bronwyllfa Fruit & Bulb Farm, St. Asaph, for Tulips.
- To Mr. A. Dawkins, King's Road, Chelsea, for Tulips.
- To The Welsh Bulb Fields, St. Asaph, for Tulips.
- To Messrs. Carter Page, London Wall, E.C. 2, for Dahlias.
- To Messrs. Clark, Dover, for a mixed group of herbaceous and bulbous plants
- To Mr. G. R. Downer, Chichester, for Lupins.

To The Gayborder Nurseries, Melbourne, Derbyshire, for Lupins and other herbaceous plants.

To Messrs. Kelway, Langport, for Tree Paeonies.

To Messrs. L. A. Lowe, Crawley Down, for border Carnations.

To Messrs. Allen, Norwich, for Roses.

To Messrs. W. Easlea, Leigh-on-Sea, for Roses.

To Messrs. C. Engelmann, Saffron Walden, for a mixed group of Zinnias and Gerberas.

To Mr. H. J. Jones, Lewisham, for Hydrangeas.

To Messrs. G. F. Letts, Hadleigh, for Roses.

To Messrs. Keith Luxford, Sawbridgeworth, for Carnations.

To Messrs. D. Prior, The Nurseries, Colchester, for Roses.

To Messrs. Ryder, St. Albans, for a mixed group of Schizanthus hybrids and other annuals.

To Studley College, Warwickshire, for a mixed group of Stocks, Schizanthus hybrids and Larkspur hybrids.

To Swanley College, Swanley, for greenhouse plants.

To Mr. R. Aireton, Poole, for trees and shrubs.

To Messrs. R. Gill, Penryn, for mixed group of Rhododendrons and other shrubs and Primulas.

To Mr. W. J. Marchant, Wimborne, for trees and shrubs.

To Messrs. W. T. Neale, Worthing, for mixed group of Succulents and Gazanias.

To Messrs. John Scott, Merriott, for shrubs.

To Messrs. D. Stewart, Ferndown, Wimborne, for mixed group of Rhododendrons, Azaleas and other shrubs.

To Messrs. Walton Park Nurseries, Walton-on-Thames, for Azaleas, Rhododendrons and other shrubs.

To Mr. G. G. Whitelegg, Chislehurst, for Azaleas.

To Messrs. Robert Green, Crawford Street, W., for Bay trees.

To Mr. Klinkert, Richmond, for Topiary work.

To Alpine Nurseries, Wimborne, for rock-garden plants.

To Mr. Ernest Ballard, Malvern, for Ramondias and encrusted Saxifrages.

To Messrs. Bedford & Page, Trumpington, Cambridge, for rock garden plants.

To Messrs. Bedford & Page, for trough gardens.

To Messrs. Clarence Elliott, Stevenage, for rock garden plants.

To Messrs. John Forbes, Hawick, for a mixed group of shrubs and rock garden plants.

To Messrs. W. E. Th. Ingwersen, Gravetye, E. Grinstead, for rock garden plants.

To Mr. Ernest Ladhams, Elstead Nurseries, nr. Godalming, for rock garden plants.

To Messrs. Oliver & Hunter, Moniaive, Dumfriesshire, for mixed group of Primulas, Meconopsis, Lilies, and rock garden plants.

To Messrs. G. Reuthe, Keston, for rock garden plants.

To Mr. G. E. Welch, Cambridge, for rock garden plants.

#### *Banksian Medals.*

To Mr. F. A. Greenfield, Fredith, Worthing Road, Horsham, for Orchids.

To Mrs. D. Bucknall, Doneraile, co. Cork, for a mixed group of Anemones and Habranthus pratensis.

To Messrs. Harkness, Leeming Bar, Yorks., for herbaceous plants.

To Highfield Nursery Co., Enfield, for Violas.

To Messrs. Redgrove & Patrick, Seal, Sevenoaks, for a mixed group of herbaceous plants and shrubs.

To Mr. T. Robinson, Porchester Nurseries, Nottingham, for Dahlias.

To Messrs. T. Simmons, Finchley, for Violas.

To Messrs. J. F. Spencer, Hockley, for Dahlias.

To Messrs. Suffolk Seed Stores, Woodbridge, for herbaceous plants.

To Mr. Wm. Yandell, Maidenhead, for Violas.

To Messrs. Allwood, Haywards Heath, for Dianthus hybrids.

To Mr. H. A. Brown, South Chingford, for Fuchsias.

To Misses. A. & M. Cadell, Longniddry, for Roses.

To Mr. R. J. Case, Taunton, for Zonal Pelargoniums.

To Mr. W. A. R. Clifton, Chichester, for Zonal Pelargoniums.

To Mr. F. Everitt, Enfield Lock, for greenhouse plants.

To Messrs. Laxton, Bedford, for Roses.

To Mr. E. B. Le Grice, North Walsham, for Roses.

To Messrs. Wm. Lowe, Beeston, for Roses.

To Mr. T. Robinson, Nottingham, for Roses.

To Messrs. Toogood, Southampton, for Stocks and annuals.

- To Messrs. C. Wall, Bath, for Aquilegias.
- To Mrs. J. T. Wigan, Chelmsford (gr. Mr. W. G. Todd), for Schizanthus hybrids.
- To Messrs. Wood & Ingram, Huntingdon, for Roses.
- To Messrs. J. C. Allgrove, Langley, for mixed group of shrubs and herbaceous plants.
- To Mr. L. Lawrence, Taplow, for Cacti and Succulents.
- To Messrs. S. Smith, Enfield, for Cacti and Succulents.
- To W. G. Theobald, Esq., Steyning (gr. Mr. R. Baker), for Cotyledons and Echeverias.
- To Messrs. R. Veitch, Alphington, for shrubs.
- To Messrs. The Yokohama Nursery Co., Craven House, Kingsway, for Japanese dwarf trees and Kurume Azaleas.
- To Messrs. Bakers, Codsall, for rock garden plants.
- To Messrs. Bowell & Skarratt, Cheltenham, for rock garden plants.
- To Messrs. Clark, Dover, for rock garden plants.
- To Messrs. Dartington Hall, Ltd., Totnes, for rock garden plants.
- To Messrs. Clarence Elliott, Stevenage, for trough gardens.
- To Mr. A. Hensan, New Barnet, for a mixed group of Sempervivums, Trolliuses and Lupins.
- To The Hocker Edge Gardens, Cranbrook, for trough gardens.
- To Letchworth Plants, Letchworth, for rock garden plants.
- To Messrs. Maxwell & Beale, Broadstone, for rock garden plants.
- To Owermoigne Nurseries, Owermoigne, for rock garden plants.
- To Mr. Amos Perry, Enfield, for rock garden plants.
- To Messrs. J. Robinson, Cannock House Gardens, Eltham, for rock garden plants.
- To Messrs. W. H. Rogers, Southampton, for rock garden plants.
- To Messrs. L. R. Russell, Richmond, for rock garden plants.
- To Mr. W. Wells, jnr., Merstham, for rock garden plants.
- To Mr. G. P. Wood, Ashted, for rock garden plants.
- To Messrs. Wm. Wood, Taplow, for rock garden plants.

*(To be continued.)*



# EXTRACTS FROM THE PROCEEDINGS

## OF THE

# ROYAL HORTICULTURAL SOCIETY.

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### NOTICES TO FELLOWS.

#### SUBSCRIPTIONS.

Fellows are reminded that their friends joining the Society after July 1 and before October 1 will be required to pay only a half-year's subscription, and will receive the monthly journal commencing with the July number. Those joining after October 1 and before January 1 pay a full year's subscription, which entitles them to all the privileges of Fellowship until January 1, 1938. Back numbers of the JOURNAL are obtainable by Fellows at half the published price.

#### SMALL EXHIBITS.

At the Fortnightly Meeting on June 9 and 10, Mrs. JOHN HOLDEN, of Newbury, staged on the table set aside for small exhibits from Fellows five different species of 'Solomon's Seal.' The one commonly grown, *Polygonatum multiflorum*, was represented not only by the white-flowered type but also by the rose-coloured variety. Mr. E. D. DONCASTER brought from his garden at Burley two attractive pans of encrusted saxifrages and one of the American *Silene Ingramii*. Mr. D. B. CRANE, of Highgate, exhibited cut blooms of several varieties of violettas.

At the meeting on June 23 and 24, Mr. GEORGE YELD, V.M.H., who has done so much to improve the 'Day Lilies,' showed four fine hybrids of his own raising, together with flowers of *Hemerocallis flava*. A comparison between the parent and its progeny showed in a striking fashion the progress which has been made in size of flower and range of colours. Mrs. JOSEPH ADDISON sent from her garden at Witley cut sprays of the American fringe-tree *Chionanthus virginica*, and Major GEORGE CHURCHER, of Lindfield, showed two vases of single-flowered Paeonies. The type of *Cistus*  $\times$  *Aquilari*, which is a natural hybrid between the unspotted form of *ladaniferus* and *populifolius* var. *lasiocarpa*, has unspotted white flowers. Sir OSCAR WARBURG sent a spotted variety of the hybrid raised in his garden at Headley. The typical form of *ladaniferus* was one parent, and from it the hybrid had inherited a dark crimson spot at the base of each petal. Sir OSCAR also sent the natural bigeneric hybrid *Halimicistus*  $\times$  *Revolii* (*Cistus salvifolius*  $\times$  *Halimium alyssoides*), which occurs in the south of France. From Mr. A. KERR, of Hayes, came a specimen of the greenish-flowered orchid *Eulophia andamanensis*. This uncommon plant has seldom been seen since it received a Botanical Certificate in company with nine other Orchids sent by Sir TREVOR LAWRENCE to the Temple Show in 1902.

Fellows are invited to exhibit interesting or well-grown plants, flowers, fruits or vegetables on this special small exhibits table. Any Fellow who desires to stage an exhibit consisting of not more than three pots, vases, or dishes may do so at any Fortnightly Meeting, although he has not applied for space beforehand. Such exhibits must be entered with the clerk at the small exhibits table by noon on the morning of the Meeting, and he will provide exhibitor's cards and stage the exhibits. Exhibitors are not permitted to place on this special table any notice or leaflets, nor may any orders be booked there. Exhibits staged under this regulation may be considered for Certificates of Cultural Commendation.

#### CALENDAR.

Wednesday, August 5, 1-6 P.M. Fortnightly Show of flowers in season.

August 18, 1-6 P.M.—Fortnightly Meeting and Show. This is the occasion for the competition for the Foremarke Cup for Gladioli (see special notice, p. cxxx).

At 3.30 P.M. a lecture will be given in the Society's Lecture Room in the New Hall by Mr. W. E. TH. INGWERSEN, on "Plant Hunting in the Caucasus."

*August 26 and 27, 2-4 P.M.*—Practical demonstration at Wisley (weather permitting) on the vegetative propagation of plants (see special notice below).

*September 1, 1-6 P.M.*—Fortnightly Meeting and Show of flowers in season, in the New Hall : Alpine Garden Society's Show in the Old Hall.

At 3.30 P.M. in the Lecture Room of the New Hall on *September 1*, Mr. W. LOGAN will give a lecture on "Fern Growing."

*September 8, 12 noon-7.30 P.M.*—National Dahlia Society's Show in the New Hall, while in the Old Hall, from 1-7.30 P.M., the British Bee-Keepers' Association stage their annual Show. Both these Shows are open on *September 9* from 10 A.M.-5 P.M. Fellows' tickets admit free.

*September 11, 12 noon-7 P.M.*—National Rose Society's Show in both the Halls. This Show will remain open on *September 12* from 11 A.M.-5 P.M., and Fellows' tickets will admit free.

*September 14.*—Entries for British Floral Art Examination, October and November, close (see p. cxxx).

*September 15, 1-6 P.M.*—Fortnightly Meeting and Show of flowers in season.

In the afternoon at 3.30 P.M., in the Lecture Room of the New Hall, a lecture will be given by Mr. H. G. HILLIER on "Lilacs : Beautiful Varieties, Hybrids and Species."

*September 29, 1-6 P.M.*—Fortnightly Meeting and Show of flowers in season.

At 3.30 P.M. in the Lecture Room of the New Hall, on *September 29*, a lecture will be given by Mr. G. C. JOHNSON on "Horticultural Education."

*September 29.*—Entries for Fruit and Vegetable Show close.

#### THE AUTUMN SHOWS.

Fellows will have noticed in the Calendar that there is no Great Autumn Show this year. The Council was unable to obtain suitable accommodation for this purpose. However, a Great Autumn Show will be held again in 1937 at the National Hall, Olympia.

This does not mean, however, that all those interesting autumn coloured shrubs and herbaceous plants usually seen at the Great Autumn Show will not be on exhibition for the Fellows this year ; it will merely mean that they will not be brought up in quite such masses as is the case with a large Show, but that they will be distributed over the fortnightly shows in September, October, November and December.

#### HALL LETTINGS.

The London Allotments and Gardens Show Society are staging a Fruit, Flower and Vegetable Show in the New Hall on *September 5*. Free admission will be granted on presentation of R.H.S. Fellowship tickets, and any further particulars as regards the show itself may be obtained from the organizer, Mr. E. H. SPURGEON, at 8 Princes Park Lane, Hayes, Middlesex.

As in former years, the Model Engineering Exhibition is being held this year in the Society's Old Hall from *September 17 to 26*. Further particulars are obtainable from Messrs. PERCIVAL MARSHALL & CO., LTD., "The Model Engineer," 13-16 Fisher Street, London, W.C.1.

The Chemists' Exhibition will be held in the New Hall from *September 21-25*, and those interested may obtain full particulars from Mr. R. S. ELY, The British & Colonial Druggist, Ltd., 194-200 Bishopsgate, London, E.C. 2.

On *October 1* the Civil Service Horticultural Federation will hold a show of Flowers, Fruit and Vegetables in the New Hall, to which R.H.S. Fellowship tickets will admit free. The Show will open at 1 P.M. and close at 7.30 P.M.

The Medical Exhibition will be held in the New Hall from *October 19-23*. Particulars may be obtained from Mr. R. S. ELY, The British & Colonial Druggist, Ltd., 194-200 Bishopsgate, London, E.C. 2.

#### PRACTICAL DEMONSTRATIONS AT WISLEY.

A demonstration on the vegetative propagation of plants will be given at Wisley on *August 26 and 27* from 2 P.M. to 4 P.M. (weather permitting). Fellows who intend to be present at this demonstration are asked to inform the Director, R.H.S. Gardens, Wisley, Ripley, Surrey, beforehand, mentioning which day they will attend, in order that adequate arrangements may be made.

#### FOREMARKE CHALLENGE CUP.

At the Fortnightly Show on *August 18*, the Foremarke Challenge Cup will be offered for award to trade and amateur growers for twenty spikes of named Gladioli in not less than ten varieties and not more than two spikes of any one

variety. Entries for this cup should be sent, on the appropriate form obtainable from the Secretary, so as to arrive not later than by the first post on Wednesday, August 12.

#### COLORADO BEETLE.

The Ministry of Agriculture and Fisheries desires the attention of the Fellows of the Society to be called to the danger of the Colorado Beetle. As a result of the spread of the Colorado Beetle into the north-east of France and into Belgium, it is probable that it will reach this country by direct flight from time to time.

The measures undertaken for the eradication of the pest on its arrival here will depend for their success on their being carried out in good time. The Ministry of Agriculture is accordingly anxious to obtain as early notification as possible of the discovery of the pest in this country. Potato growers, especially those in Essex, Kent and Sussex, are asked to keep a close watch on their crops and to inform the Ministry as soon as they discover or suspect the presence of the beetle.

A full description of the beetle is given in the Ministry's Advisory Leaflet, No. 71.

Any yellowish beetle with black stripes or any red or reddish yellow grub that is found feeding upon potato leaves should be regarded with suspicion. When suspected Colorado Beetles or grubs are discovered, specimens should be placed in a tin box (in which no holes should be punched) with a piece of potato leaf, and the box should be sent to the Ministry of Agriculture, 10 Whitehall Place, London, S.W. 1, with a letter stating the exact place where the insects were caught and the name and address of the finder. No other steps should be taken until instructions are received from the Ministry; it is especially important that the crop should *not* be sprayed or interfered with in any way, as this is likely to cause the beetles to spread, and an outbreak possibly affecting only two or three square yards may be distributed throughout the field. Apart from the specimens sent to the Ministry, no beetles or grubs should be removed.

The object of these measures is to keep the insect confined to as small an area as possible, so that it may be eradicated without loss of time.

#### HORTICULTURAL COLOUR CHART.

In the May number of the JOURNAL a special leaflet was inserted with regard to the proposed publication of a colour chart for horticultural purposes. As a result of this circular, more than 600 forms of application have been returned, which assures the publication of such a chart as is suggested in two volumes. Further applications from Fellows or Associates who would like to procure a copy of this work will be welcomed. A copy of the leaflet will be sent to anyone who may have mislaid the one circulated.

It is proposed to publish this colour chart in two volumes at a price not exceeding 10s. a volume, *plus* postage, to Fellows.

#### PROPOSED EXPEDITION TO CHINA.

An expedition for the purpose of collecting seeds and plants in China is being organized for 1937.

China has produced a vast number of plants of many kinds particularly suitable for our gardens. Fellows who are interested in this expedition may obtain further particulars on application to the Secretary of the Society. The shares in the expedition will be in units of £10.

#### EXAMINATIONS.

##### *British Floral Art Diploma.*

As a result of the examination for the British Floral Art Diploma held in June, four Diplomas were awarded. The names of the successful candidates are as follows:—

Miss BARBARA ALICE BOWMAN, The Red House, Barham, Canterbury.  
Miss JOAN ELIZABETH GLENISTER, 19 Carew Road, Eastbourne.  
Miss MABEL CONSTANCE JUDD, 17 Fernhall Drive, Ilford, Essex.  
Miss LYNETTE ROBERTS, 27 Chilworth Mews, Paddington, W.

It has been decided to hold the next examination in the autumn. Entries will close on Monday, September 14. The written examination will be on October 12 and the practical examination on November 17 and 18. The syllabus and entry form may be obtained from the Society's Offices on application.

*Teachers' Advanced Examination.*

Twenty-one candidates presented themselves for the Teachers' Advanced Examination (written and practical), and the Certificate was awarded to 12 of these. The names of the successful candidates are as follows :—

*Pass with Honours.*

POWELL, AUBREY G. C., Wharf Cottage, Sampford Peverell, Devon.

*Pass.*

CLARKE, FRANK, Ivy Cottage, Palgrave, Diss, Norfolk.  
 COWARD, GEORGE CECIL, 30 Victoria Road, Penrith, Cumberland.  
 CREEK, ALFRED HUGH, School House, Bures, Suffolk.  
 HEBDEN, FRANCIS JAMES, c/o Botanic Garden, Cambridge.  
 HODGMAN, MISS MURIEL G., Keers Green, Aythorpe Roding, Dunmow.  
 KEMP, RONALD WILLIAM, 53 Furze Platt Road, Maidenhead.  
 RICHMOND, MISS MARY W., "Bescar," Brow Lane, Scarisbrick, Ormskirk.  
 SIVYER, GEOFFREY R., 93 Thurlby Road, Wembley, Middlesex.  
 URTON, GEORGE, 7 Chapel Yard, Trap Lane, Sheffield.  
 USHERWOOD, MISS E. D., St. Dunstan's College, Catford, S.E. 6.  
 WALKER, JOHN WATSON, c/o The University, Reading.

*National Diploma in Horticulture Examinations.*

The National Diploma in Horticulture has been awarded to the following as a result of the written and practical examinations for the Diploma held this year :—

*Section 1. General Horticulture.*

BAND, ROBERT, R.H.S. Gardens, Wisley, Ripley, Surrey.  
 BEEZLEY, JAMES, 71 Cleaveland Road, Surbiton.  
 DEANS, WILLIAM, 21 Wishing Tree Road, Hollington, St. Leonards.  
 DUGGAN, JOHN, 139 Oxford Road, Reading.  
 ENGLISH, WILLIAM STANLEY, R.H.S. Gardens, Wisley, Ripley, Surrey.  
 GARDNER, RONALD, R.H.S. Gardens, Wisley, Ripley, Surrey.  
 HUNTBACH, MISS MARION, The Gate House, Great Shelford, Cambridge.  
 KEIGHLEY, ERIC RIGG, "Lawndale," Over Lane, Rawdon, nr. Leeds.  
 LOWRIES, LEONARD BRIAN, Newbury, Ash Road, Hartley, Longfield, Kent.  
 McELWEE, JOSEPH, 50 Primrose Hill, Chelmsford.  
 SAYER, HERBERT WILFRID, Gulval Experimental Station, Penzance.  
 SHUTLER, FRANCIS HENRY, The Lodge, Uplands, Fareham, Hants.  
 SMITH, FRANK GORDON, Seale-Hayne Agricultural College, Newton Abbot.  
 USHERWOOD, MISS E. D., St. Dunstan's College, Catford, S.E. 6.  
 YOUNG, MISS BEATRIX MELVILLE, The Horticultural College, Swanley, Kent.  
 YOUNG, ROSS, 28 Heriot Hill Terrace, Edinburgh 7.

*Section 6. Gardening in Public Parks.*

COLLIER, HENRY A. F., 45 Pirbright Road, Southfields, S.W. 18.

*Section 7. Horticultural Inspection.*

ASHTON, MISS DOROTHY OSTELL, St. Margaret's, Lockleys, Welwyn, Herts.

Twenty-six candidates have passed the Preliminary Examination for the Diploma and will be eligible to take the Final Examination on completion of six years of practical gardening.

The practical examinations for these Certificates and Diplomas took place in the Society's Gardens, Wisley, in June and July.

*1937 Examinations.*

The syllabuses giving the entry forms and dates for the 1937 examinations will be available in August, and may be had on application to the Society's Offices.

**WHITE FLY PARASITE.**

The demand for the parasite of the Greenhouse White Fly has been so great this year that we regret to say that it has been impossible to supply all those who have applied for it. It is hoped, however, gradually to increase the supply, and every effort will be made to send the parasite to those who have already sent in their applications.

## INSPECTION OF GARDENS.

Many Fellows may not be aware of the terms under which their gardens can be inspected by the Society's Garden Inspector, and advice given thereon. They are set out below, and it will be seen that special arrangements can be made when Fellows living in the same district co-operate.

"The inspection of Gardens belonging to Fellows is conducted by a thoroughly competent Inspector from the Society, who reports and advises at the following cost, viz. : a fee of £3 3s. for one day (or £5 5s. for two consecutive days), together with all out-of-pocket expenses. No inspection may occupy more than two days, save by special arrangement. Should two or more Fellows residing in the same district, with their Gardens within easy reach of one another, desire to have the services of the Garden Inspector, arrangements will be made for such a combined inspection and the fee and expenses divided by consent of those concerned. Fellows wishing for the services of an Inspector are requested to give at least a week's notice and choice of two or three days, and to indicate the most convenient railway station and its distance from their Garden. Gardens can only be inspected at the written request of the owner."

## THE GARDENS AT BODNANT.

Fellows visiting North Wales will be glad to know that the Gardens at Bodnant, Tal-y-Cafn, North Wales, are, by Lord ABERCONWAY's permission, open to Fellows of the Society without charge on Tuesday and Friday afternoons throughout the summer from 2 to 5 P.M.

## WISLEY IN AUGUST.

A particular feature of the Wisley Garden this month will be the herbaceous border, which continues to produce a varied display of the best plants available, especially Phloxes, Heleniums, Asters of the *Amellus* group, *Helianthus*, *Lobelia*s, *Rudbeckias*, *Gaillardias*, and numerous other plants suitable for this purpose. The trial of *Gladioli* will be found in an adjoining bed, between the old apple trees.

In Seven Acres most of the shrubs will be passing over, with the exception of the N. American *Aesculus parviflora*, *Buddleia Davidi*, the late *Spiraeas* such as *S. ariaefolia*, and *Cotoneasters*, while the earliest *Berberis* are already beginning to show colour in their berries.

In the Heath Garden, however, there should be many varieties of *Erica cinerea*, *E. vagans* (the Cornish heath), and *E. ciliaris*, with certain hybrids between them, making fine splashes of colour, and as Heathers are among the best of plants for almost any garden where a continuation of bloom is required this part of the garden should certainly be visited. The pond in Seven Acres will still be bright with many Water-lilies in bloom, besides those useful and attractive plants for the margin, the Flowering Rush (*Butomus umbellatus*) and the blue Pickerel-Weed (*Pontederia cordata*).

In the Wild Garden the visitor will find an excellent display of the tall *Lilium superbum* on the side of a ditch, and of the Tiger Lily by the path between the Bamboos; *L. myriophyllum superbum* may also come into bloom near the end of the month under the Oak trees at the lower side of the Pear orchard. Of the shrubs in the Wild Garden mention must be made of *Eucryphia pinnatifolia* with its large white blossoms, and of *Clethra alnifolia* for the sweet scent of the flowers. The latter plant has grown into a very large rounded bush on the alpine meadow. Another decorative plant in the Wild Garden at this season is the Willow Gentian (*Gentiana asclepiadea*), which is fully established there in the damp and shade of this part of the garden.

Of interesting plants on the Rock Garden the chief must be among the genera *Gentiana*, *Campanula* and *Cyananthus*, all with blue flowers, and those who are especially attracted by these will find a number of different species in various places where conditions are suitable for them. *Anagallis collina* will attract attention by reason of its fiery red flowers, while *Roscoea purpurea*, *Zauschneria californica*, *Lilium formosanum* var. *Pricei*, and the first of those *Cyclamen* species which bloom at this time of the year may be noted.

In a border outside the alpine house the brilliant *Gazanias* continue to bloom in sunny weather, and against the wall of the house is the bright blue hybrid *Caryopteris* × *clandonensis*, a first-class plant as a late-flowering shrub.

Returning down the hill the visitor can pass either along the new Rose border (King's Avenue) or by the border of annuals opposite the Pear orchard. At the lower end, behind the Hornbeam hedges, are the trials of Sweet Peas, Pentstemons, Godetias, Viscarias, Sidalceas, Dahlias, and hybrid Venidiums, many of which will be in bloom this month, or during part of it.

Within the large Temperate house the pink Oleander (*Nerium Oleander*), blue *Plumbago capensis*, and climbing blue-flowered *Ipomoea Learii*, besides Fuchsia species, are all worthy of notice. In the second house is a collection of hybrid Fuchsias and Pelargoniums, while the first always contains several half-hardy plants of more than usual interest, including *Gilia californica* and *Statice ornata* as examples.

Occupying spaces on the wall of the Laboratory are several late-flowering shrubs which come into bloom now or are already in flower, including the brilliant blue *Ceratostigma Willmottianum*, *Abelia Schumannii* and *A. grandiflora*, both of which are pink, the scarlet Pomegranate (*Punica Granatum*), and curious *Feijoa*.

## GENERAL MEETINGS.

MAY 19, 1936, AT CHELSEA.

**FRUIT AND VEGETABLE COMMITTEE.**—Mr. E. A. BUNYARD, F.L.S., in the Chair, and twenty-six other members present.

There was no business before the Committee on this occasion.

**FLORAL COMMITTEE A.**—Mr. J. M. BRIDGEFORD in the Chair, and twenty-three other members present.

**Awards Recommended :—***Award of Merit.*

To Begonia 'Florence Bush' as a greenhouse plant for exhibition (votes unanimous), from Messrs. Blackmore & Langdon, Bath. See p. 290.

To Begonia 'Gustav Lind' as a variety for bedding (votes unanimous), from Mr. H. L. Pedersen, Waltham Abbey. See p. 290.

*Selected for trial at Wisley.*

*Aquilegia clematiflora* mixed, from Messrs. Sluis en Groot, Enkhuizen, Holland.

**Other Exhibits.**

Lord Aberconway, Bodnant: *Streptocarpus* 'Bodnant Bluebird' and S. 'Bodnant Butterfly' (to be seen again).

Messrs. Allwood, Haywards Heath: *Dianthus Allwoodii* 'Joy' and 'Pearl.'

Messrs. B. R. Cant, Colchester: H.T. Rose 'Dame Catherine.'

Lt.-Col. Sir Wm. Ingilby, Bt., Harrogate: *Pelargonium* 'Ripley Castle.'

Messrs. Kelway, Langport: Tree Pæony 'Langport Lad.'

Mr. G. Kerswill, Exeter: *Pelargonium* 'Dunsford.'

Lionel de Rothschild, Esq., Exbury: *Hippeastrums*.

Messrs. Watkins & Simpson, London: *Papaver orientale* 'Columbia.'

**FLORAL COMMITTEE B.**—Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and thirty-two other members present.

**Awards Recommended :—***Award of Merit.*

To *Erica australis*, Mountstewart variety, as a hardy flowering shrub (votes 19 for, 6 against), from the Marchioness of Londonderry, D.B.E., Newtownards. See p. 291.

To *Lapeyrouisia cruenta alba* as a hardy flowering bulbous plant (votes 13 for, 3 against), from Lady Lawrence, Dorking. See p. 292.

To *Oxyptalum coeruleum* as a flowering plant for the greenhouse (votes 15 for), from Miss Howell, Aberdovey, and the Viscountess St. Cyres, Lymington. See p. 294.

To *Teucrium fruticans* var. *azureum* as a half-hardy flowering shrub (votes 17 for, 5 against), from Collingwood Ingram, Esq., Benenden. See p. 296.

To *Viola cucullata* as a hardy flowering plant (votes 18 for, 7 against), from Mrs. Bucknall, Doneraile. See p. 297.

*Preliminary Commendation.*

To *Gladiolus* sp. as a flowering plant for the cool greenhouse (votes unanimous), from Lady Lawrence, Dorking.

To Homoglad × 'Redstart' (*Homoglossum revolutum* × *Gladiolus flavidus*) as a tender flowering plant (votes unanimous), from Collingwood Ingram, Esq., Benenden.

**Other Exhibits.**

Lord Aberconway, Bodnant: *Nomocharis meleagrina*.

G. P. Baker, Esq., Sevenoaks: *Distylium racemosum*, *Ranunculus asiaticus*, Cretan var.

Messrs. Bees, Chester: *Syringa* 'Professor Hugo de Vries.'

Lt.-Col. C. H. Grey, Cranbrook: *Arisaema* sp.

Mr. John Hill, Burnham: *Clianthus Dampieri*, *Anigozanthos coccineus*.

Messrs. Hurst, Houndsditch: *Calceolaria Darwinii* × *C. Clibranii*.

Collingwood Ingram, Esq., Benenden: *Exochorda* seedling.

- G. H. Johnstone, Esq., Trewithen : *Myrtus Lechleriana*.  
 Knap Hill Nursery, Woking : *Berberis Vernae*, *Cytisus* 'Toome's Variety.'  
 The Marchioness of Londonderry, Newtownards : *Psoralea pinnata*, *Pittosporum eugenioides*, *Acacia verticillata*, *A. juniperina*.  
 Lady Martineau, Ascot : *Cytisus* 'Bambino,' *Rheum palmatum* var. *tanguticum*.  
 Lt.-Col. L. C. R. Messel, O.B.E., Handcross : *Calothrix tetragona*, *Richardia Rehmannii*, *Symphytum* sp. E.K.B. 337, *Deutzia* sp., *Piptanthus concolor* var. *yunnanensis*, *Acacia Riceana*.  
 Mrs. H. Milford, Chedworth : *Eucomis* sp.  
 Messrs. Oliver & Hunter, Moniaive : *Meconopsis grandis*.  
 Parley Brook Nurseries, Woking : *Cytisus Dallimorei* var. *prostrata*.  
 Lady Rayleigh, Chelmsford : *Clematis afoliata*.  
 The Duke of Richmond and Gordon, Chichester : *Richardia Rehmannii*.  
 Mrs. Roper, Chard : *Loasa* sp.  
 Messrs. Scott, Merriott : *Daphne* 'Somerset.'  
 Major F. C. Stern, Goring-by-Sea : *Rosa Banksiae*, single white variety.  
 Messrs. Wallace, Tunbridge Wells : *Lilium* 'Red Star.'  
 Messrs. Watkins & Simpson, Drury Lane : *Nierembergia hippomanica*.  
 Worth Park Nurseries, Three Bridges : *Ligustrum nitidum*.

**ORCHID COMMITTEE.**—Sir JEREMIAH COLMAN, Bt., in the Chair, and twenty-three other members present.

**Awards Recommended :—**

*First Class Certificate.*

To *Laeliocattleya* × 'Areca' var. 'Titanic' (C. × 'Enid' × L.-c. × 'General Maude') (votes unanimous), from Messrs. McBean, Cooksbridge. See p. 292.

To *Cymbidium* × 'Hathor,' Westonbirt var. ('Cormorant' × 'Wheatear') (votes 16 for), from Messrs. H. G. Alexander, Tetbury. See p. 291.

To *Brassolaeliocattleya* × 'Princess Shimadzu' var. 'June' (B.-l.-c. × 'Caligula' × C. × 'Prince Shimadzu') (votes 17 for, 1 against), from M. L. Wells, Esq., Chiddingfold, Surrey. See p. 290.

To *Phalaenopsis* × 'Katherine Siegwort' var. 'Snowdon' (*amabilis* × 'Gilles Gratiot') (votes unanimous), from Messrs. Sanders, St. Albans. See p. 294.

To *Phalaenopsis* × 'Katherine Siegwort' var. 'Everest' (*amabilis* × 'Gilles Gratiot') (votes unanimous), from Messrs. Sanders. See p. 294.

*Award of Merit.*

To *Miltonia* × 'Bruges,' Gatton Park var. ('Lycaena' × 'Princess Astrid') (votes 19 for, 1 against), from Sir Jeremiah Colman, Bt., Gatton Park, Surrey. See p. 292.

To *Miltonia* × 'Gatton Princess' ('Duchess of Sutherland' × 'Amaranta') (votes 16 for, 1 against), from Sir Jeremiah Colman, Bt. See p. 292.

To *Laeliocattleya* × 'Orange Gem' ('Elinor' × 'G. S. Ball') (votes 13 for, 6 against), from Lionel de Rothschild, Esq., Exbury, Southampton. See p. 292.

To *Cymbidium* × 'Madonna' var. 'Dainty' (*Alexanderi* × 'P. W. Janssen') (votes unanimous), from N. Prinsep, Esq., Pevensey Bay. See p. 291.

To *Vuykstekeara* × 'Cambria' var. 'N. Prinsep' (O. × 'Clonius' × V. × 'Rudra') (votes 14 for), from N. Prinsep, Esq. See p. 297.

To *Odontoglossum crispum* var. 'Purity' (votes unanimous), from N. Prinsep, Esq. See p. 293.

To *Cymbidium* × 'Sedgewick' ('Magali Sander' × *Pauwelsii*) (votes unanimous), from Messrs. McBean. See p. 291.

To *Cymbidium* × 'Dorchester' var. 'Alpha' (*Alexanderi* × 'Tityus') (votes unanimous), from Messrs. McBean. See p. 290.

*Cultural Commendation.*

To Messrs. Sanders for *Neomoorea irrorata*, with three many-flowered spikes.

To Mr. Dunster, Orchid grower to E. R. Ashton, Esq., Camden Park, Tunbridge Wells, for *Coelogyne Dayana*, with a dozen pendulous racemes.

To Mr. T. Andrews, gardener to Mrs. Wilson, Norton Manor, Malmesbury, for *Odontioda* × 'Lydia,' with six many-flowered spikes.

To Mr. R. Buckman, Orchid grower to M. L. Wells, Esq., Chiddingfold, Surrey, for *Miltonia vexillaria* var. 'Lyoth,' with 11 spikes, bearing a total of 54 flowers.

To Mr. R. Buckman, Orchid grower to M. L. Wells, Esq., Chiddingfold, Surrey, for *Masdevallia Veitchii* var. 'Prince of Wales,' with 7 flowers.



**NARCISSUS AND TULIP COMMITTEE.**—Mr. G. W. LEAK, V.M.H., in the Chair, and seventeen other members present.

**Award Recommended :—**

*Award of Merit.*

To *Narcissus* 'Cushendall' as a variety for show purposes (voting unanimous), shown by Mr. Guy L. Wilson. See p. 293.

*Selected for trial.*

The following Daffodils, shown by Mr. Guy L. Wilson, were selected for trial at Wisley as varieties for garden decoration :—

*Narcissus* 'Thomas Hardy.'

*Narcissus* 'Lamplighter.'

**JOINT RHODODENDRON COMMITTEE.**—Mr. J. B. STEVENSON in the Chair, and fifteen other members present.

**Awards Recommended :—**

*First Class Certificate.*

To *Rhododendron* × 'Kewense Hybrid' var. 'Tip-the-Wink' (votes unanimous), from Lt.-Col. G. H. Loder, Handcross, Sussex. See p. 295.

To *R. Souliei* var. 'Exbury Pink' (votes 11 for, 3 against), from Lionel de Rothschild, Esq., Exbury. See p. 296.

To *R. pachypodum* (votes 10 for, 5 against), from Lionel de Rothschild, Esq. See p. 296.

*Award of Merit.*

To *R.* × 'Ouida' (votes 10 for, 1 against), from Lord Aberconway, Bodnant, N. Wales. See p. 296.

To *R.* × 'Embley Park' (votes 9 for, 3 against), from J. J. Crosfield, Esq., Romsey, Hants. See p. 295.

To *R.* × 'Rosabel' (votes unanimous), from J. J. Crosfield, Esq. See p. 296.

To *R.* × 'Break of Day' (votes 7 for, 1 against), from Lionel de Rothschild, Esq. See p. 295.

To *R. (Azalea)* × 'George Reynolds' (votes 12 for), from Lionel de Rothschild, Esq. See p. 295.

To *R. Nuttallii* var. *stellatum* (votes unanimous), from Lionel de Rothschild, Esq. See p. 296.

The Committee desired to see again : *R. chlorops*, from the Earl of Stair, Stranraer, Scotland.

**Other Exhibits.**

Lord Aberconway, Bodnant, N. Wales : *R.* × 'Etna,' *R.* × 'Medusa,' *R.* × 'Sunrise,' and *R.* × 'Euryalus.'

Lt.-Col. G. H. Loder, Handcross, Sussex : *R. Wardii*.

C. Ingram, Esq., Benenden, Kent : a *R. Loderi* garden hybrid, *R.* 'Miss Clutton' × *R. dichroanthum*, and *R.* 'Summers Dawn.'

The Marchioness of Londonderry, Newtownards, Co. Down : *R.* × *Dalhousiae* *Victorianum*.

Lionel de Rothschild, Esq. : *R. (Azalea)* × 'Bengal Fire.'

**JOINT ROCK GARDEN PLANT COMMITTEE.**—Major F. C. STERN, O.B.E., M.C., in the Chair, and sixteen other members present.

**Awards Recommended :—**

*Award of Merit.*

To *Anemone potentilloides* as a flowering plant for the rock garden and alpine house (votes 8 for, 2 against), from Lady Lawrence, Dorking. See p. 290.

To *Leontopodium alpinum* var. *crassense* as a flowering plant for the rock garden and alpine house (votes 9 for), from Messrs. W. E. Th. Ingwersen, East Grinstead. See p. 292.

To *Primula Kingii* as a flowering plant for the alpine house (votes 7 for, 1 against), from Lord Aberconway, Bodnant. See p. 294.

To *Ramondia Myconi* var. *rosea* as a flowering plant for the rock garden and alpine house (votes 12 for, 1 against), from Mr. E. Ballard, Colwall. See p. 295.

To *Viola cazorlensis* as a flowering plant for the alpine house (votes unanimous), from Messrs. W. E. Th. Ingwersen, East Grinstead. See p. 297.

*Cultural Commendation.*

To Mr. F. C. Puddle, gardener to Lord Aberconway, Bodnant, for pans of *Primula Sherriiffae* and *Primula Wigramiana*.

*Selected for trial at Wisley.*

Aubrietia 'Trevor Rose,' sent by Mrs. E. Lloyd Edwards, Trevor Hall, near Wrexham.

**Other Exhibits.**

Messrs. Ingwersen, East Grinstead : *Saxifraga arachnoidea*.

Lady Lawrence, Dorking : *Anemone* × *Lesseri*.

The Marchioness of Londonderry, Newtownards : *Primula* sp.

Mrs. H. Milford, Chedworth : *Androcymbium* sp., *Sutera* sp.

Messrs. Robinson, Nottingham : Rosa 'Peon.'

Messrs. Watkins & Simpson, Ltd., London, W.C. : *Aquilegia chrysantha* var. *nana*.

T. West, Esq., Merstham : *Cassiope fastigiata*.

**JOINT IRIS COMMITTEE.**—Major F. C. STERN in the Chair, and eleven other members present.

**Awards Recommended :—**

*First Class Certificate.*

To *Iris auranitica*, for general garden use (votes unanimous), shown by Major F. C. Stern, Goring-by-Sea. See p. 291.

*Award of Merit.*

To *Iris antilibanotica*, for general garden use (votes unanimous), shown by G. P. Baker, Esq., Sevenoaks. See p. 291.

To *Iris Eubankiana*, for general garden use (votes unanimous), shown by G. P. Baker, Esq. See p. 292.

*Preliminary Commendation.*

To *Irises (regelio-cyclus)* 'Wanadis,' 'Agatha' and 'Clotho,' shown by Messrs. C. van Tubergen, Holland. See pp. 291, 292.

**Other Exhibits.**

G. P. Baker, Esq. : *Iris Westii*, *I. basaltica* (A.M. 1935), *I. sofarana magnifica* (A.M. 1902), and *Iris Lortetii*.

Major F. C. Stern : *Iris Gatesii*.

Messrs. C. van Tubergen, Haarlem, Holland : *Iris (regelio-cyclus)* 'Asporina.'

**JOINT PERPETUAL-FLOWERING CARNATION COMMITTEE.**—Mr. W. E. WALLACE, J.P., V.M.H., in the Chair, and eight other members present.

**Award Recommended :—**

*Award of Merit.*

Perpetual Carnation 'Doris Allwood,' for show and market (votes unanimous), shown by Messrs. Allwood Bros., Haywards Heath.

**Other Exhibit.**

Mr. S. J. Hose, Bletchingly, Surrey : Perpetual Carnation 'White Baroness.'

JUNE 9, 1936.

SEWELL MEDAL COMPETITION.

*The Sewell Medal* which was offered for award for the best exhibit of six pots or pans of plants suitable for the rock garden or alpine house shown by an amateur, was awarded to Mark Fenwick, Esq., Abbotswood, Stow-on-the-Wold, Glos.

A lecture was given by Mr. O. C. A. SLOCOCK on "Rhododendrons for the Garden." See p. 317.

Chairman : Mr. W. R. OLDHAM, J.P.

**FLORAL COMMITTEE A.**—Mr. J. M. BRIDGEFORD in the Chair, and fifteen other members present.

**Awards Recommended :—**

*Gold Medal.*

To Messrs. Waterer, Sons & Crisp, Twyford, for Irises.

*Silver Flora Medal.*

To Messrs. Allgrove, Slough, for Eremuri, etc.

To Messrs. Barr, Taplow, for herbaceous plants.

To Messrs. Blackmore & Langdon, Bath, for Irises and Delphiniums.

To Messrs. Dobbie, Edinburgh, for Dahlias.

To Mr. G. R. Downer, Chichester, for Lupins.

To the Rev. Canon Rollo Meyer (gr. Mr. P. J. Izzard), Ditchat, for Irises.

To Messrs. Peed, West Norwood, for *Streptocarpus*.  
To Messrs. Prichard, Christchurch, for herbaceous plants.

*Silver Banksian Medal.*

To Messrs. Bunyard, Maidstone, for Irises.  
To Messrs. Engelmann, Saffron Walden, for Carnations, Zinnias and Gerberas.  
To Messrs. Kelway, Langport, for Pyrethrums and Tree Paeonies.

*Flora Medal.*

To Mr. J. F. Cumming, Wisbech, for Pyrethrums.  
To Messrs. S. Low, Enfield, for Carnations and other greenhouse plants.  
To Suffolk Seed Stores, Woodbridge, for herbaceous plants.

*Banksian Medal.*

To Messrs. Allwood, Haywards Heath, for Carnations and Dianthus.  
To Messrs. Bunyard, Maidstone, for old-fashioned Roses.  
To Mr. E. Ladhams, Elstead, for shrubs and herbaceous plants.  
To Messrs. Stewart, Wimborne, for shrubs and herbaceous plants.  
To Messrs. Wallace, Tunbridge Wells, for herbaceous plants.

*Selected for trial at Wisley.*

*Lupinus polyphyllus* 'The Pink Countess,' from Mr. G. R. Downer, Chichester.  
Paeony 'Shah,' from G. P. Baker, Esq., Sevenoaks.

**Other Exhibits.**

Messrs. Brown & Such, Maidenhead : Dahlias.  
D. B. Crane, Esq., Highgate : double Lupin.  
Dr. J. Ross, Rickmansworth : Geum 'Flame.'  
Walton Park Nurseries, Walton-on-Thames : *Papaver orientale* 'Cowichan.'

**FLORAL COMMITTEE B.**—Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and twenty-three other members present.

**Awards Recommended :—**

*Silver-gilt Banksian Medal.*

To Mr. W. A. Constable, Southborough, for Lilies.  
To Messrs. Waterer, Bagshot, for Rhododendrons.

*Silver Flora Medal.*

To Hocker Edge Gardens, Cranbrook, for Lilies, Irises and other hardy plants.  
To Messrs. Russell, Windlesham, for greenhouse shrubs and plants.

*Silver Banksian Medal.*

To Messrs. Hillier, Winchester, for flowering shrubs.  
To Messrs. Perry, Enfield, for Irises.

*Banksian Medal.*

To Messrs. Burkwood & Skipwith, Kingston, for flowering shrubs.  
To Messrs. Neale, Worthing, for Gazanias and succulents.  
To Messrs. Rogers, Southampton, for rock garden plants.  
To Messrs. Russell, Windlesham, for rock garden plants.  
To Mr. W. Wells, jun., Merstham, for rock garden plants.  
To Messrs. Wm. Wood, Taplow, for rock garden plants.

*Award of Merit.*

To *Clematis* 'Betty Thorn,' as a hardy flowering climber (votes 13 for, 4 against), from Mr. Ernest Markham, East Grinstead. See p. 354.

To *Clematis*  $\times$  *vedrariensis* as a hardy flowering climber (votes 13 for), from Mr. Ernest Markham, East Grinstead. See p. 354.

To *Puya alpestris* as a flowering plant for the greenhouse (votes 17 for, 5 against), from Messrs. Elliott, Stevenage. This award was recommended, subject to verification of name, on May 19, 1936, and is now confirmed. See p. 356.

*Preliminary Commendation.*

To *Lapeyrousia fissifolia* as a flowering plant for the cool house (votes unanimous), from Major W. Van de Weyer, Dorchester.

To *Lapeyrousia silenoides* as a flowering plant for the cool house (votes unanimous), from Major W. Van de Weyer, Dorchester.

*Cultural Commendation.*

To Mr. J. Comber, gardener to Lt.-Col. L. C. R. Messel, O.B.E., Nymans, Handcross, for a very floriferous specimen of the Lizard Orchid, *Himantoglossum hircinum*.

**Other Exhibits.**

Mr. S. Boothman, Maidenhead : rock garden plants.  
Burnham Lily Nursery, Burnham : *Lilium parviflorum* var. *luteum*.  
Chez Nous Nursery, Newick : rock garden plants.

- Mr. A. Corderoy, Eltham : rock garden plants.  
 Messrs. Fielden & Crouch, Wrotham : rock garden plants.  
 L. Glover, Esq., Haslemere : *Nomocharis oxypetala*.  
 Lt.-Col. C. H. Grey, Cranbrook : *Watsonia Stanfordiae*, *W. Vanderspuyae*.  
 Messrs. Hillier, Winchester : *Syringa yunnanensis* var. *rosea*.  
 Mrs. Holden, Newbury : *Doronicum austriacum*.  
 Miss Hopkins, Coulsdon : rock garden plants.  
 C. Ingram, Esq., Benenden : *Gladiolus hirsutus* × *callistis*, *Genista Jahandiezii*.  
 W. L. Irvine, Esq., Bromborough : *Nomocharis oxypetala*, *N. Stracheyi*.  
 Lady Lawrence, Dorking : *Pentstemon procerus*, *Brodiaea aurea*.  
 Mr. L. Lawrence, Taplow : rock garden plants.  
 Mr. E. Markham, East Grinstead : Clematis 'Gravetye Memory,' C. 'Miriam Markham.'  
 Marsden Nursery, Ashted : hardy plants.  
 Lt.-Col. L. C. R. Messel, Handcross : *Leptospermum scoparium*, Tasmanian form, *Kolkwitzia amabilis*.  
 Mrs. R. L. Newman, Dartmouth : *Bomarea acutifolia* var. *punctata*, *Abelia triflora*, *Melaleuca squarrosa*, *M. squamea*.  
 Mr. R. C. Notcutt, Woodbridge : *Syringa* spp.  
 Messrs. Prichard, Christchurch : *Centaurea Sternbergii*.  
 Messrs. Russell, Windlesham : *Clematis florida bicolor*, Bougainvillea 'Lady Hudson.'  
 Major F. C. Stern, Goring-by-Sea : *Syringa Sweginzowii*.  
 Major W. Van de Weyer, Dorchester : *Vinca major* var. *alba*.  
 Mr. R. Colpoys Wood, West Drayton : shrubs and Lupins.

**ORCHID COMMITTEE.**—Sir JEREMIAH COLMAN, Bt., in the Chair, and sixteen other members present.

**Awards Recommended :—**

*Silver Banksian Medal.*

To Messrs. Charlesworth, Haywards Heath, for a group.

*Cultural Commendation.*

To Messrs. Armstrong & Brown, Tunbridge Wells, for a well-cultivated plant of *Cirrhopetalum Collettii*.

**Other Exhibits.**

Messrs. Stuart Low, Jarvisbrook : a group.

Messrs. Armstrong & Brown, Tunbridge Wells : a group.

Messrs. Sanders, St. Albans : a group.

Messrs. H. G. Alexander, Tetbury : a group.

**FRUIT AND VEGETABLE COMMITTEE.**—Mr. E. A. BUNYARD, F.L.S., in the Chair, and eleven other members present.

*Selected for trial at Wisley.*

Melon 'Petworth Park' (green flesh), from Mr. F. Streeter, Petworth Park Gardens, Petworth.

**JOINT RHODODENDRON COMMITTEE.**—Mr. J. B. STEVENSON in the Chair, and twelve other members present.

**Awards Recommended :—**

*First-class Certificate.*

To *Rhododendron* × 'Lady Bessborough' var. 'Roberte,' (votes unanimous), from Lionel de Rothschild, Esq., Exbury House, Southampton. See p. 356.

*Award of Merit.*

To *R.* × 'Master Dick,' (*R. Griersonianum* × *R. Don* X) (votes 11 for), from J. J. Crosfield, Esq., Embley Park, Romsey, Hants. See p. 356.

To *R.* × 'A. Bedford' (votes 10 for), from Lionel de Rothschild, Esq. See p. 356.

**Other Exhibits.**

Lt.-Col. G. H. Loder, Handcross, Sussex : *R.* × 'Isabella.'

Dame Alice Godman, South Lodge, Horsham, Sussex : *R.* (*Azalea*) *occidentale* hybrid.

**SCIENTIFIC COMMITTEE.**—Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and seven other members present.

*Beetles in seeds of Astragalus Durhamii.*—Mr. G. F. Wilson reported that the beetle from the *Astragalus* seeds shown on February 25 last proved to be *Bruchus astragali* var. *fischeri* Humm.

*Forms of Ranunculus acris*.—Mr. Marsden Jones showed three unusual forms of *Ranunculus acris*. In the first the stamens were aborted and the plant wholly and continuously female (save on one occasion when it was starved). In the second the plant was entirely male and it, and all seedlings bred from it in the second generation, has curiously crisped foliage. In the third the flowers were neuter, both carpels and stamens being aborted. This plant has also proved constant in this character. The leaves were of normal type.

*Uncommon trees*.—Mr. A. B. Jackson showed the following uncommon trees from the garden at Tortworth: *Acer erianthum* (China), *Larix Gmelinii* (E. Siberia), *Zelkova serrata* (Japan), and *Ulmus racemosa* (N. America).

*Bulb on Tulip Stem*.—Mr. Hales showed a Tulip stem with a bulb in the axil of one of the cauline leaves. The stems showed signs of injury below the bulb.

*Aberrant Wallflower*.—A curious Wallflower was shown in which the foliage was developed to an abnormal extent compared with the inflorescences, the flowers were usually small and in many one or more sepals had become petaloid, while the petals were often fewer than normal, as were the stamens. The plant which had appeared among normal seedlings was fully fertile. The specimen came from Mr. Stanley of Torquay.

*Aberrant Cowslip*.—A Cowslip was sent by Mrs. Esdaile of East Hoathly, Sussex, and Mr. Worsdell, who had examined it, reported that the bracts subtending the umbel had become foliaceous, while the flowers were fewer and much smaller than usual. A second umbel had developed (still with small flowers) on what would normally be a flower stalk.

*Double Lupin*.—Mr. D. B. Crane showed a spike (one of several from the plant which had appeared as a seedling in his garden) of *Lupinus polyphyllus* with all the flowers double, the doubling involving both wings and keel as well as the standard.

*Fritillaria Stracheyi*.—A plant of this species (referred to the Committee from Floral Committee B) was shown by Mr. Irvine, grown from bulbs collected in India. Mr. Irvine also showed *Nomocharis oxypetalata* in flower.

**JOINT PERPETUAL-FLOWERING CARNATION COMMITTEE**.—Mr. J. M. BRIDGEFORD in the Chair, and five other members present.

#### Exhibit.

Carnation 'Mary Jewell,' shown by Mrs. M. Jewell, Crackington, Bude.

**JOINT IRIS COMMITTEE**.—Major F. C. STERN in the Chair, and ten other members present.

#### Selected for trial at Wisley.

Iris 'Gainsborough,' shown by Messrs. G. Bunyard, Maidstone.

Iris *Douglasiana* *alba*, *I. tenax* 'Purple Queen' and *I. tenax* 'Marian,' shown by Messrs. A. Perry, Enfield.

Irises 'St. Hilary' and 'St. Colombe,' shown by the Rev. Rollo Meyer, Ditcheat, Somerset.

Iris 'E. Y. Seedling,' shown by Orpington Nurseries, Orpington, Kent.

#### Other Exhibits.

Mr. M. Biffen, Cambridge: Iris seedlings.

Messrs. A. Perry, Enfield: *Iris Douglasiana* 'Gladys.'

Lady Leconfield, Petworth Park: Iris species, collected in Cyprus.

The Orpington Nurseries, Orpington: Iris 'Rosannah.'

**JOINT ROCK GARDEN PLANT COMMITTEE**.—Major F. C. STERN, O.B.E., M.C., in the Chair, and fourteen other members present.

#### Award Recommended:—

##### Award of Merit.

To *Primula leucochoa* as a flowering plant for the rock garden (votes 12 for, 3 against), from Lord Aberconway, Bodnant. See p. 356. This award was recommended, subject to verification of name, on May 19, 1936, and is now confirmed.

#### Exhibits.

E. D. Doncaster, Esq., Burley: *Astrantia carniolica* var. *rubra*.

Lt.-Col. C. H. Grey, D.S.O., Cranbrook: *Aquilegia* sp.

Lady Lawrence, Dorking: *Tsusophyllum Tanakae*, *Dianthus superbus*.

The Director, R.H.S. Gardens, Wisley: *Centaurea simplicicaulis*.

JUNE 23, 1936.

Mr. R. D. TROTTER in the Chair.

A lecture was given by Mr. E. MARKHAM on "Climbing Plants" (see p. 338).

**FRUIT AND VEGETABLE COMMITTEE.**—Mr. E. A. BUNYARD, F.L.S., in the Chair, and nine other members present.

**Awards Recommended :—**

*Silver Hogg Medal.*

To Messrs. Walker, Lalla, Tasmania, for an exhibit of Apples packed for market.

*Hogg Medal.*

To Messrs. T. Rivers, Sawbridgeworth, Herts, for an exhibit of Cherries, Peaches, Plums and Figs in pots.

**Other Exhibits.**

R.H.S. Commercial Fruit Trials, Wisley : Strawberry 'Western Queen.'

Messrs. T. Rivers, Sawbridgeworth, Herts : Strawberries 'Royal Sovereign,' 'The Duke' and 'Western Queen.'

**SCIENTIFIC COMMITTEE.**—Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and two other members present.

*Aberrant Meconopsis.*—Dr. Tincker sent a photograph of an aberrant terminal flower of *Meconopsis betonicifolia* in which there were about 30 petals and axial proliferation, so that two successive flowers were superposed upon the first.

*Erysimum linifolium* × *Wallflower.*—Mr. Thorington sent a seedling of *Erysimum linifolium* habit, but with flowers showing a considerable amount of orange. He thought it possibly a hybrid with a Wallflower, plants of which had been growing near by. He was endeavouring to secure seed, but so far none had set.

**FLORAL COMMITTEE A.**—Mr. J. M. BRIDGEFORD in the Chair, and fifteen other members present.

**Awards Recommended :—**

*Silver-gilt Flora Medal.*

To W. B. Cranfield, Esq. (gr. Mr. J. J. Parkinson), Enfield Chase, for Paeonies.

*Silver Flora Medal.*

To Messrs. Allwood, Haywards Heath, for Border Carnations.

To Messrs. Baker, Wolverhampton, for Lupins.

To Messrs. Blackmore & Langdon, Bath, for Delphiniums.

To Messrs. Prichard, Christchurch, for herbaceous plants.

To Messrs. Waterer, Sons & Crisp, Twyford, for Paeonies.

*Silver Banksian Medal.*

To Messrs. Bath, Wisbech, for Paeonies.

To Messrs. F. Cant, Colchester, for Roses.

To Messrs. Kelway, Langport, for Paeonies.

To Mr. E. Ladhams, Elstead, for herbaceous plants, shrubs and Water-lilies.

To Messrs. S. Low, Enfield, for Carnations, Fuchsias and other greenhouse plants.

To Suffolk Seed Stores, Woodbridge, for herbaceous plants.

*Flora Medal.*

To Messrs. Engelmann, Saffron Walden, for Carnations.

To Messrs. Simmons, Finchley, for Violas.

To Messrs. W. H. Simpson, Birmingham, for Lupins.

To Mr. F. G. Wood, Ashted, for Belladonna Delphiniums, etc.

*Banksian Medal.*

To Mr. W. E. B. Archer & Daughter, Sellindge, for Roses.

To Messrs. Bunyard, Maidstone, for herbaceous plants.

To Messrs. Bunyard, Maidstone, for old-fashioned Roses.

To Mr. J. F. Cumming, Wisbech, for Pyrethrums, Scabious.

To Messrs. Daniels, Norwich, for *Chrysanthemum maximum* 'Esther Read.'

To Messrs. Easlea, Leigh-on-Sea, for Roses.

To Messrs. Gibson, Cranleigh, for Paeonies and Dianthus.

To Messrs. Haywards, Clacton-on-Sea, for Pinks, etc.

To Letchworth Plants, Ltd., Letchworth, for herbaceous plants.

To Messrs. Wheatcroft, Nottingham, for Roses.

*Selected for trial at Wisley.*

Hemerocallis 'Chrysostom,' from G. Yeld, Esq., Gerrards Cross.

Paeony 'Fashion,' from Major G. Churcher, Lindfield.

Primula 'Asthere Hybrids,' from Lady Gregory (gr. Mr. F. C. Selwyn), Seven-oaks.

Pyrethrum 'Avis Mary,' from Mr. J. K. Jones, Evesham.

#### Other Exhibits.

Messrs. F. Cant, Colchester : Rose 'Lady Cave-Brown-Cave.'

Messrs. Chaplin, Waltham Cross : Roses 'Chaplin's Triumph,' 'Enid Gladstone' and 'Mary Woods,' the first two to be seen again.

Messrs. Clark, Dover : herbaceous plants.

**FLORAL COMMITTEE B.**—Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and seventeen other members present.

#### Awards Recommended :—

##### *Silver Flora Medal.*

To Mr. W. A. Constable, Southborough, for Lilies.

To Hocker Edge Gardens, Cranbrook, for alpine plants, Lilies and other bulbous plants.

To Messrs. Waterer, Bagshot, for Rhododendrons.

##### *Silver Banksian Medal.*

To Messrs. Perry, Enfield, for Lilies, Irises and other bulbous plants.

##### *Flora Medal.*

To Messrs. Prichard, Christchurch, for rock garden and border plants.

##### *Banksian Medal.*

To Mr. S. Boothman, Maidenhead, for Campanulas and other alpine plants.

To Brookside Nurseries, Oxford, for Campanulas and other alpine plants.

To Messrs. Burkwood & Shipwith, Kingston-on-Thames, for flowering shrubs.

To Messrs. Russell, Windlesham, for Nymphaeas and rock garden plants.

To Messrs. Rogers, Southampton, for rock garden plants.

##### *Award of Merit.*

To *Geranium anemonefolium* as a tender flowering plant (votes 9 for, 3 against), from T. Hay, Esq., Hyde Park, London, W. 2. See p. 354.

To *Grevillea alpina* as a tender flowering shrub (votes unanimous), from the Countess of Cranbrook, Snape Priory, Suffolk.

#### Other Exhibits.

Mr. R. Aireton, Poole : *Philadelphus* × *Airetonii*.

W. Cohen, Esq., Berkhamsted : Campanula 'Ruth of Amersfort.'

Mr. A. Corderoy, Eltham : rock garden plants.

Miss Hopkins, Coulsdon : rock garden plants.

Collingwood Ingram, Esq., Benenden : *Delphinium macrocentron*.

The Director, John Innes Hort. Inst., Merton : *Anthemis* sp.

Mr. E. Markham, East Grinstead : *Rosa Moyesii* 'Pink Lady,' Clematis 'King's Birthday,' Clematis 'La Lorraine.'

P. M. Synge, Esq., West Byfleet : *Impatiens* sp.

Mr. R. Colpoys Wood, West Drayton : shrubs and hardy plants.

**ORCHID COMMITTEE.**—F. J. HANBURY, Esq., in the Chair, and fourteen other members present.

#### Awards Recommended :—

##### *Silver Banksian Medal.*

To Messrs. Charlesworth, Haywards Heath, for a group.

To Messrs. Armstrong & Brown, Tunbridge Wells, for a group.

##### *Lindley Medal.*

To E. R. Ashton, Esq., Camden Park, Tunbridge Wells, for an unusually large and well-flowered plant of *Brassia verrucosa*.

##### *Cultural Commendation.*

To Messrs. Armstrong & Brown, Tunbridge Wells, for a well-cultivated plant of *Platyclinis latifolia*.

**JOINT RHODODENDRON COMMITTEE.**—Mr. J. B. STEVENSON in the Chair, and six other members present.

#### Exhibit.

*Rhododendron* 'Isabella' var. × 'Nevada' (*R. auriculatum* × *R. Griffithianum*), as a hardy flowering shrub for general garden use. From C. Ingram, Esq., Benenden, Kent.

**JOINT IRIS COMMITTEE.**—Major F. C. STERN in the Chair, and five other members present.

**Exhibits.**

*Iris Clarkii*, shown by G. P. Baker, Esq., Hillside, Sevenoaks.

*Iris* 'Florella,' shown by G. Yeld, Esq., Gerrards Cross.

**JOINT DELPHINIUM COMMITTEE.**—Mr. G. W. LEAK, V.M.H., in the Chair, and ten other members present.

*Selected for trial at Wisley.*

*Delphinium scabrifolium*, shown by Mr. T. Hay, V.M.H., New Lodge, Hyde Park.

**Other Exhibit.**

*Delphinium* 'Musiwhite,' shown by Miss A. Walkden, Sale.

**JOINT ROCK GARDEN PLANT COMMITTEE.**—The Hon. DAVID BOWES-LYON in the Chair, and four other members present.

**Exhibit.**

The Director, John Innes Hort. Inst., Merton : *Mimulus primuloides*.

AMATEURS' FLOWER SHOW.

JUNE 30, 1936.

**FLORAL COMMITTEE A.**—Mr. J. M. BRIDGEFORD in the Chair, and twelve other members present.

**Award Recommended :—**

*Award of Merit.*

To Rose 'Chaplin's Triumph' (votes unanimous), from Messrs. Chaplin, Waltham Cross. See p. 357.

**Other Exhibit.**

Messrs. Chaplin, Waltham Cross : Rose 'Enid Gladstone.'

**FLORAL COMMITTEE B.**—Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and fourteen other members present.

**Awards Recommended :—**

*Banksian Medal.*

To Mrs. A. M. Pape, Binfield, Berks, for a group of Australian shrubs.

*Award of Merit.*

To *Cistus* × *Aguilari* forma *maculatus* (*C. ladaniferus* × *C. populifolius* var. *lasiocalyx*) as a hardy flowering shrub (votes 10 for, 1 against), from Sir Oscar Warburg, Epsom. See p. 354.

To *Lilium ochraceum* as a hardy flowering plant (votes 12 for), from the Rt. Hon. Lord Swaythling, Southampton. See p. 355.

To *Rosa multibracteata* as a hardy flowering shrub (votes unanimous), from Mrs. Hiatt Baker, Almondsbury, Glos. See p. 357.

To *Schizophragma integrifolium* as a hardy flowering shrub (votes 7 for, 1 against), from Mrs. Hiatt Baker, Almondsbury, Glos. See p. 357.

*Preliminary Commendation.*

To *Oenothera glaber* (?) as a hardy flowering plant (votes 10 for, 1 against), from Messrs. Elliott, Stevenage.

*Selected for trial at Wisley.*

Two *Oenotheras*, both sent by Messrs. Elliott, Stevenage.

**Other Exhibits.**

Mrs. Hiatt Baker, Almondsbury : *Syringa japonica*.

Mrs. G. W. W. Blaythwayt, West Porlock : *Cordylone Banksii*, *Lomatium ferruginum*.

Messrs. Burkwood & Skipwith, Kingston : *Ceanothus* 'Dignity,' *Philadelphus* × *Burkwoodii*.

Collingwood Ingram, Esq., Benenden : *Nothofagus procera*, *Gladiolus* 'Margot,' G. 'Asor.'

Major F. C. Stern, Goring-by-Sea : *Alstroemeria Ligta*.

The Rt. Hon. Lord Swaythling, Southampton : *Lilium maritimum*, *L. parvum*, *L. columbianum*.



**JOINT RHODODENDRON COMMITTEE.**—Mr. J. B. STEVENSON in the Chair, and seven other members present.

**Exhibits.**

*Rhododendron* × 'Ayah,' and *R.* × 'Constance' (*R. auriculatum* × (*R. arboreum album* × *Griffithianum*)), both from Lionel de Rothschild, Esq., Exbury House, Southampton.

**JOINT IRIS COMMITTEE.**—Mr. G. P. BAKER, V.M.H., in the Chair, and five other members present.

**Exhibit.**

*Iris chrysophoenica*, shown by G. P. Baker, Esq., Sevenoaks, Kent.

**JOINT DELPHINIUM COMMITTEE.**—Mr. D. INGAMILLS in the Chair, and nine other members present.

*Selected for trial at Wisley.*

*Delphinium tatsienense* 'Pam,' shown by Mr. T. Carlile, Twyford.

**Other Exhibits.**

C. F. Hills, Esq., Hillingdon : Delphiniums 'Bullfinch' and 'Chaffinch.'

Mrs. D. Ackroyd, Bury St. Edmunds : Delphinium 'Beryl Ackroyd.'

**JOINT ROCK GARDEN PLANT COMMITTEE.**—Major F. C. STERN, O.B.E., M.C., in the Chair, and six other members present.

**Awards Recommended :—**

*Award of Merit.*

To *Gentiana Georgei* as a flowering plant for the rock garden and alpine house (votes unanimous), from Lord Aberconway, Bodnant, and Major F. C. Stern, Goring-by-Sea. See p. 354.

To *Gypsophila aretioides* as a flowering plant for the alpine house (votes unanimous), from Dr. Roger Bevan, Henley-on-Thames. See p. 355.

*Cultural Commendation.*

To Mr. Russell Leslie, gardener to Dr. Roger Bevan, Henley-on-Thames, for a specimen plant of *Gypsophila aretioides*.

**Other Exhibits.**

Lord Aberconway, Bodnant : *Gentiana* sp. K.W. 11009.

Dr. P. L. Giuseppe, Felixstowe : *Dianthus haematocalyx*, *Utricularia coerulea*.

**CHIEF AWARDS IN THE COMPETITIVE CLASSES.**

*Silver Cup* to the most successful competitor in Division A.

To Colonel Stephenson R. Clarke, C.B., Borde Hill, Cuckfield (Gdnr. W. Fleming).

*Silver Cup* to the most successful competitor in Division B.

To C. Luckin, Esq., Wadlands, East Grinstead, Sussex.

*Silver Cup* to the most successful competitor in Division C.

To W. H. Wren, Esq., 40 Garstone Lane, Kenley, Surrey.

## DONATIONS TO THE SOCIETY'S GARDENS, WISLEY, 1935.

ABERCONWAY, Lord, Bodnant, N. Wales; Hybrid Rhododendrons for rock garden; seeds from Yunnan. ABBOTT-YOUNG, Mrs. S., Walton-on-Thames; Seed of 'Water-Duck' from Australia. ALGIERS, UNIVERSITY BOTANIC GARDEN, N. Africa; Collection of seeds. ALLMAN, Mrs. D. A., Cheadle, Cheshire; Collection of New Zealand seeds. ALLWOOD BROS., Messrs., Haywards Heath, Sussex; Collections of border Carnations and Allwoodii Pinks. ALMA-ATA BOTANIC GARDEN, Kazakstan, U.S.S.R.; Collection of seeds. AMSTERDAM BOTANIC GARDEN, Holland; Collection of seeds. ANDERSON, N. S., Tregrehan, Par, Cornwall; Collections of shrubs and cuttings. ANLEY, Mrs., Wych Hill, Woking; Plants for rock garden. ARMSTRONG, C. W., Vancouver, B.C.; Plant of hybrid Pentstemon; plants and seeds of *Cornus Nuttallii*. BAKER, G. P., Kippington, Sevenoaks; Collection of seeds from Morocco; plants of *Iris chrysographes* var. BAKER, Mrs. H. C., Almondsbury, Glos; Cuttings of shrubs. BAKER, R. St. B., Vincent Sq., London, S.W. 1; Seeds of *Cornus Nuttallii*. BALCOMBE, W., Wokingham, Berks; Collection of seeds of shrubs, etc. BALFOUR, A. P., Slough, Bucks; Seeds of Australian shrubs. BARKER, F., Stevenage, Herts; Plants of Primulas, etc., from Turkey for rock garden. BARNARD, Prof. T. T., Wareham, Dorset; Collection of corms of South African Iridaceae. BARNHAM NURSERIES LTD., Barnham, Sussex; Grafts of Apple. BARR, P. R., King Street, Covent Garden, W.C. 2; Seeds of Allium species. BARR & SONS, Taplow, Bucks; Plants of Asters. BARRES, DOMAINE DES, Nogent-sur-Vernisson, France; Collection of seeds. BARTHOLOMEW, A. C., Reading; Collection of seeds. BERESFORD, Lt.-Col. H. P., Upper James Street, W. 1; Seeds of Sweet Peas, and of tree from N. Rhodesia; bulbs of *Zephyranthes rosea*. BERGIAN BOTANIC GARDEN, Stockholm; Collection of shrub seeds. BERKELEY, C., Wellington, B.C.; Plants of hybrid Iris. BERKELEY, R. G., Spetchley Park, Worcester; Plant of *Paonia Willmottiae*. BERLIN-DAHLEM BOTANIC GARDEN; Collection of seeds. BLAYTHWAYT, Mrs. G. W., West Porlock, Somerset; Plants of *Datura sanguinea*. BODGER SEEDS LTD., Messrs., El Monte, California; Seeds of Cosmea. BOOTH, F. H. A., Chiddingfold, Surrey; Collection of plants for rock garden. BOOTHMAN, H. S., Furze Platt, Maidenhead; Plants for rock garden. BOSTOCK, F., Northampton; Grafts of Apple. BOXALL, Mrs. E., Uckfield, Sussex; Plant of Polyanthus. BREMEN BOTANIC GARDEN, Germany; Collection of seeds. BRIDGEFORD, J. M., 27 Drury Lane, W.C. 2; Plants of *Salvia dichroa* var. *magnifica*; Dianthus seedlings; seed of Antirrhinum for Rust experiment; of yellow *Bignonia* sp. BRITTON, Miss E. A., Tiverton, N. Devon; Collection of plants for rock garden. BROOKLYN BOTANIC GARDEN, N.Y., U.S.A.; Collection of seeds. BROWN, F. C., Wisley; Seeds of *Lycium chinense*; cuttings of *Ceanothus*. BRUSSELS BOTANIC GARDEN, Belgium; Collection of seeds. BUCHAREST, UNIVERSITY BOTANIC GARDEN, Rumania; Collection of seeds. BUDA-PEST, UNIVERSITY BOTANIC GARDEN, Hungary; Collection of seeds. BULLEY, A. K., Neston, Cheshire; Plants of *Campanula*, *Daphne*, *Gentian*, *Lilium*, etc. BUNYARD, E. A., Allington, Maidstone; Books for Library; plant of Cineraria; collection of Pear buds and grafts. BURKWOOD & SKIPWITH, Messrs., Kingston-on-Thames; *Cytisus* and other shrubs. BUTT, G. C. B., Colchester, Essex; Grafts of Pear. BUTLER, Mrs., Upham, Hants; Seeds of Saxifrage. BUTTER, —, London; Seed of *Solanum* sp. BUTTER, Mrs., Haywards Heath, Sussex; Cuttings of *Cornus alba* var. *Spaethii*. CAHEN, L., Marlow, Bucks; Various bulbs, seeds and plants. CAMBRIDGE BOTANIC GARDEN; Plants, cuttings, and collection of seeds. CAMPBELL, D., Regent's Park, London; Collection of herbaceous plants. CANE, Sir JOHN DU, Enton, Godalming; Plant of *Lithospermum rosmarinifolium*; corms of *Babiana*, *Watsonia* and *Gladiolus* vars. CAWDOR, Dowager Countess, Haslemere, Surrey; Bulbs of *Galanthus Olgae*. CHITTENDEN, F. J., R.H.S., London; Bulbs of *Lilium ochraceum*; tubers of *Gloriosa* sp.; seeds of *Pinus excelsa*, *Caesalpinia*, etc. CLARKE, Col. STEPHENSON, Borde Hill, Sussex; Plants of *Richea scoparia*, *Sarmienta repens*, *Schima*, and *Rhododendron sulphureum*. CLAYTON, Miss, Henfield, Sussex; Bulb of *Haemanthus* sp. (?). CLEVERLEY, Mrs., Ripley, Surrey; Plant of *Sophora tetraptera grandiflora*. CLIBRANS, Messrs., Altrincham, Cheshire; Plants of *Chrysanthemum erubescens*; *Scrophularia nodosa variegata*. CLUTTERBUCK, Sir P., Srinagar, Kashmir; Seeds of native alpine plants. COBB, A. J., University of Reading; Plants of hybrid Berberis. COMPLIN, Miss E. F., Abbotswood, Guildford;

Seeds of New Zealand 'Kowhai.' COOKE, R. B., Corbridge-on-Tyne, Northumberland; Seeds for rock garden. COOPER, —, Headington, Oxford; Plants of hybrid Saxifrages and *Campanula Raineri alba*. COPELAND, T., Finchampstead, Berks; Seeds of *Sophora mollis*. COPELAND, W. F. M., Southampton; Bulbs of *Narcissus triandrus* hybrids. COPENHAGEN BOTANIC GARDENS, Denmark; Collection of seeds from Lapland, etc. CORSAR, K. C., Edinburgh; Seeds of Alpine and Show Auriculas. COWAN, Dr. J. M., Royal Botanic Garden, Edinburgh; Seeds of shrubs from the Himalaya. CRAIG, W. N., Weymouth, Mass., U.S.A.; Collection of Liliium seeds. CRANE, M. B., John Innes Hort. Inst., Merton, S.W.; Grafts of seedling Apples. CRANFIELD, W. B., Enfield, Middlesex; Plant of *Rhododendron* × *Prostigiatum*. CRITTALL, Mrs. M. D., Dunmow, Essex; Seeds of *Celastrus scandens*. DALRYMPLE, G. H., Bartley, Southampton; Plants of *Primula redolens* and varieties of *Lobelia fulgens*. DARMSTADT BOTANIC GARDENS, Germany; Collection of seeds. DEIGHTON, Mrs. W. L., Effingham, Surrey; Seeds of *Carica Papaya*. DENHAM, Dr. H. J., Kidlington, Oxon; Bulbs of *Tulipa sylvestris*; cuttings of various shrubs. DICKINSON, Miss K., St. Albans, Herts; Herbaceous and rock plants. DIMSDALE, Miss, Lechlade, Glos; Plants of *Iris* and *Lysichiton*; seedlings of *Acanthonema strigosum*. DIVERS, W. H., Hook, Surbiton; Grafts of Apples; buds of Pears. DOBBIN, Mrs. M. A., Blackshields, N.B.; Seeds of herbaceous and alpine plants. DUNEDIN BOTANIC GARDENS, New Zealand; Collection of seeds. DURHAM, F. R., R.H.S., London; Cuttings of Fuchsia 'Mrs. Rundle.' DURUZ, E., Wallington, Surrey; Seedlings of Gloxinias. DUTTON, Mrs., Weybridge; Cuttings of *Pelargonium* and *Cydonia*. EASTERFIELD, F., Edenbridge, Kent; Seedlings of Arum Lilies; cuttings of *Abutilon*, *Alyssum*, and *Solanum*. EATON, Col. R. W., Surbiton; Seeds from Egypt, *Polygala* sp.(?). EDINBURGH ROYAL BOTANIC GARDENS; Seeds, bulbs, etc., from E. K. Balls' expedition; two collections of seeds (one from China); plants of Primulas, etc. ELLIOTT, Dr. A., Fleet, Hants; Plants of Strawberry 'Old Fleet.' EMPIRE GARDEN NURSERIES, Vancouver, B.C.; Plants of Strawberry 'All-Red.' ERSKINE, Capt. GORE, W. Abyssinia; Seeds of *Coleus* species and of climbing plant. FALCONER, A., Stalybridge, Cheshire; Plants of *Senecio glastifolius*. FAVELL, Dr. R. V., St. Buryan, Cornwall; Cuttings of *Diosma* and *Pimelea*. FELL, Mrs., Kensington, W. 8; Seeds from W. Australia. FENWICK, M., Stow-on-the-Wold, Glos; Plant of *Kniphofia Northiae*. FINDLAY, H., Cobham, Surrey; Plant of *Salix Matsudana tortuosa*. FISHER, P., R.H.S. Gardens, Wisley; Plant of *Rosa mutabilis* fl. pl. FISHER, SON & SIBRAY, LTD., Messrs., Sheffield; Plant of *Ilex Aquifolium* var. *Atkinsonii*. FORREST, W., Cottingham; Plants of Strawberry 'The Seventeenth.' FORSTER, W. A., Zennor, Cornwall; Cuttings of *Gemista stenopetala*. FRANKFURT-AM-MAIN BOTANIC GARDEN; Collection of seeds. FRASER, Mrs., Newport, I.O.W.; Seedlings of 'Bird Tree' from W. Australia. FREIBURG BOTANIC GARDEN, Baden; Collection of seeds. GALLAGHER, Mrs. M. E. (per C. HILL, Hillingdon, Middlesex); Seed of *Nelumbo lutea*, from Canada. GENEVA BOTANIC GARDEN, Switzerland; Collection of seeds. GENOA UNIVERSITY BOTANIC GARDEN, Italy; Collection of seeds. GLASGOW BOTANIC GARDEN; Collection of seeds. GLASNEVIN BOTANIC GARDEN, Dublin; Collection of seeds. GLEED, C. J., Botley, Hants; Plants of Strawberry 'Oberschlesien.' GOODWIN, A. R., Kidderminster, Worcs; Bulb of *Narcissus* 'Ben Alder'; cuttings of hybrid *Cheiranthus*. GRAY, F. C., Bagborough, Taunton, Somerset; Plants of Strawberry 'British Queen.' GREENE, A. R., Ravenscourt Park, London, W. 12; Bulbs of *Lilium Bakerianum* and *L. ochraceum*. GRIGG, H. W. (the late), Tamerton Foliot, S. Devon; Cuttings of *Mahonia* × *Wagneri* (?). HAMBURG BOTANIC GARDEN, Germany; Collection of seeds. HANBURY, C., La Mortola, Italy; Collection of seeds. HARLEY, A., Kirkcaldy, Scotland; Bulbs of *Nomocharis aperta*; seeds of Gentians and Meconopsis. HARRIS, H. E., Putney, S.W. 15; Plant of *Oxalis cernua* from Teneriffe. HAY, C. A., Hindhead, Surrey; Plant of *Bignonia* (?) *Tweediana*. HAY, T., Hyde Park, London; Seeds of *Aconitum cordatum*, *Cytisus Battandieri* and *Primula* species. HAYES, R. (per L. HUTSON), Grasmere, Westmorland; Plants of *Calluna vulgaris* vars. HERKLOTS, G. A. C., Hong-Kong; Seeds of *Tecoma capensis*. HIGGINS, Mrs., East Croydon; Plants of blue-flowered *Sisyrinchium*. HILLING, T., & Co., Chobham, Surrey; Plants for rock garden. HINGSTON, Mrs., Barton, Notts; Seeds of annual from N. Nigeria. HOKKAIDO IMPERIAL UNIVERSITY, Sapporo, Japan; Collection of seeds. HORTON, E. B., Woking; Collection of shrubs. HUTLEY, A. L., Maldon, Essex; Bulbs of *Iris reticulata* hybrids. INGLIS, Mrs. C. M., Holywood, Co. Down; Plants of *Schizostylis coccinea* and var. 'Mrs. Hegarty.' INGRAM, C., Benenden, Kent; Seeds of *Iris Boissieri*; bulbs of *Watsonia bulbifera*. INGWERSEN, Messrs. W. E., Sharpthorne, East Grinstead, Sussex; Plants of hybrid *Sabotians*; bulbs from

Caucasus expedition. JOHN INNES HORT. INST., Merton, S.W. 19; Plants of *Rosa* species and hybrids. INNSBRUCK BOTANIC GARDEN, Austria; Seeds of alpine plants. IRVINE, W. L., Bromborough, Cheshire; Plant of *Nomocharis oxypetala*. JEFFRIES, J., Penrith, Cumberland; Plants of *Saxifraga longifolia*. JEKYLL, F., Munstead, Godalming; Collection of seeds. JENKIN, Dr., Hindhead, Surrey; Plants for rock garden. JENKINS, G. J., London, W. 1; Plants of wild Strawberry from Mauritius. JOHNSON, W., Iwer, Bucks; Seeds from Australia. JOHNSTON, L., Menton, France; Collection of seeds. KENT, W. G., East Malling, Kent; Grafts of Apple. KERR, A., Hayes, Kent; Pods of *Afgekia sericea*. KERR, W. J., Shanghai, China; Collections of seeds—part from Szechwan. KEW ROYAL BOTANIC GARDENS; Collections of seeds, plants, and cuttings. KING, Miss G. D., Bramley, Surrey; Seeds from Ceylon. KORNIK ARBORETUM, Poland; Collection of shrub seeds. LADHAMS, E., Messrs.; Collection of hybrid Lobelias. LANKESTER, C. H., Surbiton, Surrey; Plant of Bromeliad from Costa Rica. LANSDALL, F., Saltdean, Brighton; Plants of *Lavandula* and corms of hybrid *Gladiolus*. LAUSANNE UNIVERSITY BOTANIC GARDEN, Switzerland; Collection of seeds. LAWRENCE, Lady, Dorking; Plant of *Artemisia* sp. LAXTON BROS., Messrs., Bedford; Trees of new Pears. LEATHERDALE, Capt. S., Rangoon, Burma; Collection of seeds from Wa States. LEATHERLAND, Ltd., Messrs. G. E., Newcastle-on-Tyne; Tree of Apple 'Granny Smith.' LEGGE, Mrs. W., Old Windsor, Berks; Plant of *Dianthus* sp. LEIPER, W. G., South Norwood, S.E.; Seeds from Australia. LEMPERG, Dr. F., Steiermark, Austria; Collection of plants, mainly alpine. LENG, B., Socca, Basses-Pyrénées, France; Collection of seeds from Teneriffe; bulbs of *Narcissus* and *Scilla*; plants of *Sedums*. LENINGRAD BOTANIC GARDEN, Russia; Collection of seeds for rock garden. LESCHALLAS, Capt. H. P., Prestbury, Glos.; Plants of *Campanula* species. LLEWELLIN, R. E., St. Lawrence, I.O.W.; Seeds from South Africa. LORTHOUSE, T. A., Middlesbrough; Collection of seeds. LUBBOCK, Mrs., Windlesham, Surrey; Cuttings of *Lonicera* and *Salix*. LU-SHAN ARBORETUM, Kiukiang, China; Collections of tree and shrub seeds. LYTEL, Rev. Prof., Romsey, Hants; Plant of *Bursaria spinosa*, *Viola* sp.; collection of seeds. MACAULAY, R. H., Kilmichael Glassary, Argyll; Plants of *Cyananthus microphyllus* and *Lysimachia Henryi*. MACSELF, A. J., Reading, Berks; Collection of hardy Ferns. MAGOR, E. J. P., St. Tudy, Cornwall; Seedlings of *Rhododendrons*. MAHOOD, A. E., Haynford, Norwich; Seeds of *Bignonia Tweediana*. MAITLAND, Mrs. C., Bourne, Lincs; Plants of *Euonymus phellomanus*. MARBURG, UNIVERSITY OF, Lahn, Germany; Collection of seeds. MARCHANT, W. J., Wimborne, Dorset; Seeds and cuttings of various shrubs; plants of *Ericaceae* shrubs; collection of *Viburnums*. MARRETT, N. D., Sandon, Chelmsford, Essex; Plants of *Saxifraga* 'H. Marshall.' MARSHALL, Miss C., Ambleside, Westmorland; Seeds of *Davidia involucreata*. MARTIN, Dr., c/o Barclays Bank, Langham Place, W.; Seeds of *Globularia*, *Loiseluria*, and *Carpenteria*. MARTINEAU, Lady, Ascot; Seeds of *Lilium formosanum*, Price's var. MARTLEY, Mrs. F. C., Farnham, Surrey; Bulbs of *Lachenalia* species. MAXWELL, Mrs., Beaulieu, Scotland; Bulbs of *Chionodoxa*. MILLARD, F. W., Felbridge, Surrey; Seeds of *Lewisia*, species and hybrids; collection of rock garden and other plants. MILLER, Sir J., Lavant, Sussex; Collections of Kashmir seeds and plants. MITCHELL, W. J., Westonbirt, Tetbury, Glos; Seeds of *Halesia monticola*; cuttings of *Ceanothus* species; plants of *Prunus*, *Sorbus*, and *Viburnum* species. MITRA, N., Royal Botanic Gardens, Calcutta; Seeds of *Balanites Roxburghii*, and *Amherstia nobilis*. MODENA, UNIVERSITY BOTANIC GARDENS, Italy; Collection of seeds. MOORE, H. A., Saintfield, Co. Down; Plants of *Magnolia* and *Meconopsis*; cuttings of *Gaultheria* species; seeds of *Delphinium candidum*. MOORE, H. G., Dorchester, Dorset; Plants of *Primula Verwanii* hybrids. MULLIGAN, B. O., R.H.S., Wisley; Seeds of *Passiflora* and *Berberis*; cuttings of *Salix*, *Lathyrus*, and *Juniperus*; plants of *Mentha* and *Salix*. MUNICH BOTANIC GARDEN, Germany; Collection of seeds for rock garden. MUSGRAVE, C. T., Hascombe, Godalming; Collections of plants, seedlings, and seeds, chiefly for rock garden. NANKING BOTANIC GARDEN, Dr. Sun Yat Sen's Memorial Park, China; Collection of seeds. NAPIER, Lt.-Col. G. F. S., Horeham Road, Sussex; Collection of seeds from British Columbia. NEW YORK AGRIC. EXPT. STN., Geneva, N.Y., U.S.A.; Plants of Strawberries and Raspberries for Fruit Trials. NEW YORK BOTANIC GARDEN, Bronx Park; Collection of *Ceanothus* and other shrub seeds. NOEL, Lt.-Col., Peshawar, N.W. India; Bulbs of *Tulipa* sp. NORTON, J. L., East London, S. Africa; Seeds of *Strelitzia*. NOTCUTT, R. C., Woodbridge, Suffolk; Plants of *Nepeta Mussinii*, *Helianthemum*, *Chamaecistus*, *Juniperus communis hibernica*.

(To be continued.)

# EXTRACTS FROM THE PROCEEDINGS

## OF THE

### ROYAL HORTICULTURAL SOCIETY.

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#### NOTICES TO FELLOWS.

##### SUBSCRIPTIONS.

Fellows are reminded that their friends joining the Society after July 1 and before October 1 will be required to pay only a half-year's subscription, and will receive the monthly JOURNAL commencing with the July number. Those joining after October 1 and before January 1 pay a full year's subscription, which entitles them to all the privileges of Fellowship until January 1, 1938. Back numbers of the monthly parts of the JOURNAL are always obtainable by Fellows at 9d. a number.

##### CALENDAR.

*September 8, 12 NOON to 7.30 P.M.*—National Dahlia Society's Show in the New Hall, while in the Old Hall, from 1-7.30 P.M. the British Bee-Keepers' Association stage their Annual Show. Both these Shows are open on *September 9* from 10 A.M. to 5 P.M. Fellows' tickets admit free.

*September 11, 12 NOON to 7 P.M.*—National Rose Society's Show in both the Halls. This Show will remain open on *September 12* from 11 A.M. to 5 P.M., and Fellows' tickets will admit free.

*September 14.*—Entries for British Floral Art Examination close.

*September 15, 1-6 P.M.*—Fortnightly Meeting and Show of Flowers in season.

In the afternoon at 3.30, in the Lecture Room of the New Hall, a lecture will be given by Mr. H. G. HILLIER on "Lilacs: Beautiful Varieties, Hybrids and Species."

*September 29, 1-6 P.M.*—Fortnightly Meeting and Show of Flowers in season.

At 3.30 P.M., in the Lecture Room of the New Hall, on *September 29*, a lecture will be given by Mr. G. C. JOHNSON on "Horticultural Education."

*September 29.*—Entries for Fruit and Vegetable Show close.

*October 1, 1-7.30 P.M.*—Civil Service Horticultural Federation's Exhibition in the New Hall. Fellows' tickets admit free.

*October 6, 1-7.30 P.M., and October 7, 10 A.M. to 4 P.M.*—Fruit and Vegetable Show (see special notice, p. cl). On the occasion of this Show there will be a special exhibit staged from the Gardens at Wisley illustrative of pests and diseases of Fruit and Vegetables.

At 3.30 P.M., on *October 6* there will be a lecture in the Lecture Room of the New Hall by Mr. F. J. ROSE on "Grapes for the Small Garden."

*October 12.*—British Floral Art Diploma. Written Examination.

*October 13, 1 to 6 P.M.*—Fortnightly Show of Flowers in season.

At 3.30 P.M., on *October 13*, there will be a lecture in the Lecture Room of the New Hall, given by Monsieur G. TRUFFAUT on "Soil Science Progress applied to Horticulture."

At 4.30 P.M. in the Restaurant of the Old Hall, the Lily Group will meet to discuss "Propagation of Lilies by Scales."

*October 27, 1-7.30 P.M., and October 28, 10 A.M. to 4 P.M.*—Fortnightly Meeting and Show. Orchids, Stove and Greenhouse Plants and Berried Shrubs will be the principal features at this Show. (See special notice below and p. cl.)

At 3.30 P.M., on *October 27*, the first of the Masters Memorial Lectures of the year will be given by Dr. R. N. SALAMAN in the Lecture Room of the New Hall, on "The History of the Potato."

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Fellows will have noticed that this year's Calendar includes no Great Autumn Show. The Council was unable to obtain suitable accommodation for holding

## c] PROCEEDINGS OF THE ROYAL HORTICULTURAL SOCIETY.

such a show, but a Great Autumn Show will be held next year at the National Hall, Olympia.

The lack of a big Autumn Show will not mean, however, that all the interesting autumn-coloured shrubs and herbaceous plants usually seen at such a show will not be on exhibition this year : it merely means that instead of being brought up in such masses as a large show, this year they will be on view in smaller quantities at the Fortnightly Shows during September, October, November and December.

### HALL LETTINGS.

The London Allotments and Gardens Show Society are staging a Fruit, Flower and Vegetable Show in the New Hall on September 5. Free admission will be granted on presentation of R.H.S. Fellowship tickets, and any further particulars as regards the Show itself may be obtained from the organizer, Mr. E. H. SPURGEON, at 8 Princes Park Lane, Hayes, Middlesex.

As in former years, the Model Engineering Exhibition is being held this year in the Society's Old Hall from September 17 to 26. Further particulars are obtainable from Messrs. Percival Marshall & Co., Ltd., "The Model Engineer," 13-16 Fisher Street, London, W.C. 1.

The Chemists' Exhibition will be held in the New Hall from September 21 to 25, and those interested may obtain full particulars from Mr. R. S. ELY, The British and Colonial Druggist, Ltd., 194-200 Bishopsgate, London, E.C. 2.

On October 1 the Civil Service Horticultural Federation will hold a Show of Flowers, Fruit and Vegetables in the New Hall, to which Fellowship tickets will admit free. The Show will open at 1.0 P.M. and close at 7.30 P.M.

The Medical Exhibition will be held in the New Hall from October 19 to 23. Particulars may be obtained from Mr. R. S. ELY, The British and Colonial Druggist, Ltd., 194-200 Bishopsgate, London, E.C. 2.

### FRUIT AND VEGETABLE SHOW.

The Fruit and Vegetable Show will be held this year on October 6 and 7 in the New and Old Halls of the Society. It is a show at which the competition is usually very keen, and Fellows interested are asked to apply to the Secretary for the special schedule.

Four Challenge Cups are to be competed for at this Fruit and Vegetable Show :

- (1) The George Monro Memorial Cup, which is offered for the best exhibit of Grapes shown by an amateur.
- (2) The Gordon-Lennox Cup, which is offered for the most meritorious display of fruit staged by an amateur in the competitive classes.
- (3) The Affiliated Societies' Cup for Fruits, awarded for the best exhibit of fruits staged by an Affiliated Society.
- (4) The Society's Vegetable Challenge Cup, which is offered for award to the competitor who secures the greatest number of prize points in the classes for vegetables.

The following cups are offered for award outright :

- (1) The Riddell Trophy, which is offered for award in the class for a table of Vegetables.
- (2) The Sutton Vegetable Cup, which is offered for the best exhibit of twelve distinct kinds shown by an amateur.

Full particulars with regard to these cups may be found in the special schedule.

### ORCHID CHALLENGE CUP AND TROPHIES.

The Fortnightly Show on October 27 and 28 is the occasion for the award of a Challenge Cup, which is offered for the best group of Orchids exhibited in a space not exceeding 60 square feet, by an amateur who employs not more than three assistants in the orchid houses, including the head gardener. Entries for this competition should be received not later than by the first post on Wednesday, October 21, on special forms obtainable from the Secretary on application.

Two Orchid Trophies, presented by the Orchid Trade, will also be competed for, one to be awarded for the best twelve orchids, not more than two of any one genus, exhibited by an amateur who employs not more than two growers, including the head gardener, in his orchid houses, the other for the best six orchids exhibited by an amateur who employs not more than one orchid grower or gardener. Entry forms may be had on application to the Secretary, and should be sent in to arrive not later than by the first post on Wednesday, October 21.

## THE JONES-BATEMAN CUP FOR RESEARCH IN FRUIT GROWING.

In 1920 Miss L. JONES-BATEMAN, of Cae Glas, Abergele, presented to the Royal Horticultural Society a valuable silver-gilt replica of the Warwick Vase to be used for the encouragement of fruit production. It is accordingly decided to offer it triennially for researches in the growing of hardy fruits, figs, grapes and peaches in the open or under glass, and it is available for award in 1936.

Candidates should submit accounts of their work by October 31. The work dealt with must have been carried out by the candidate in the United Kingdom mainly during the past five years. The Cup will be held for three years by the successful candidate who must give a bond for its safe return, and when the Cup is relinquished the holder will receive a commemorative gold medal. The holder will be eligible to compete on the next or any succeeding occasion.

The Assessors will be three, two appointed by the Royal Horticultural Society and one by the National Farmers' Union, and they will report to the Council of the Royal Horticultural Society upon the originality and comparative potential value to the fruit-growing industry of the work of the candidates.

The Council of the Royal Horticultural Society will award or withhold the Cup at its discretion.

## SMALL EXHIBITS FROM FELLOWS.

Among the plants shown at the Society's meeting on July 7 and 8 on the table set aside for small exhibits from Fellows, Mrs. BYRON NOEL, of Irstead, Norwich, showed three fine spikes of the Madonna Lily, *Lilium candidum*. The stems were 6 feet high, and showed little signs of disease, although the weather in 1936 favoured the spread of Botrytis. Mrs. NOEL also showed some plantlets of *Nomocharis* obtained from scales inserted in sandy soil, showing that this plant, like its allies, the Lilies, may be propagated by scales.

Mrs. A. F. BARTON sent from her garden at Chappel, a vase of the violet-blue variety of *Love-in-a-Mist* called 'Dragon Fly.'

Two pretty *Streptocarpus* hybrids were sent by the Director of the John Innes Horticultural Institution, Merton. A white-flowered one had been obtained by crossing *Streptocarpus polyantha* with a white-flowered garden form, and the other, which was a pale mauve, was the result of a cross between *S. Haygarthii* and a white-flowered garden form.

At the Meeting on July 21 and 22, the John Innes Institution sent some very attractive blue-flowered hybrids between *Streptocarpus grandis* and a garden hybrid. Mr. W. SLADE sent from his garden at Petworth a flower spike of the *Dracocephalum* which was sent home by Captain KINGDON WARD under the number K.W. 11841.

Fellows are invited to exhibit interesting or well-grown plants, flowers, fruits or vegetable on this special small exhibits table. Any Fellow who desires to stage an exhibit consisting of not more than three pots, vases, or dishes may do so at any Fortnightly Meeting, although he has not applied for space beforehand. Such exhibits must be entered with the clerk at the small exhibits table by noon on the morning of the Meeting, and he will provide exhibitors' cards and stage the exhibits. Exhibitors are not permitted to place on this special table any notice or leaflets, nor may any orders be booked there. Exhibits staged under this regulation may be considered for Certificates of Cultural Commendation.

## DISCONTINUANCE OF THE AMATEURS' FLOWER SHOW.

The Amateurs' Flower Show was established in 1926 because it was thought that many amateurs, who hesitated to exhibit at the ordinary meetings of the Society, where their displays might be overshadowed by the large groups staged by nurserymen and seedsmen, would welcome an opportunity to exhibit at a show confined to amateurs. Unfortunately, however, although the prizes offered were generous and the schedule was arranged to suit all classes of amateurs, including those who gardened without any paid assistance, the number of competitors was never large and, judging by the attendances, comparatively few Fellows were interested in the Show. After careful consideration the Council has decided that the continuance of the Amateurs' Flower Show is not desirable, and therefore there will be no such event in 1937.

## COMPETITIVE CLASSES FOR AMATEURS.

Notwithstanding what has been said above, the Council is anxious to encourage amateurs to exhibit at all the Society's meetings. Non-competitive groups will always be welcomed, not only at the Fortnightly Shows, but also at the Chelsea Show and the Great Autumn Show.

In view of the discontinuance of the Amateurs' Flower Show, the Council has decided to arrange a number of competitive classes for amateurs at the Fortnightly Shows. The classes will be varied from year to year, and in 1937 they will be as follows :—

*Classes for Shrubs.*

To be held on June 8 and 9, 1937.

*Class A.*—8 vases of hardy shrubs, 8 varieties, not more than 2 of any one genus.

First prize, 60s. ; Second, 44s. ; Third, 30s.

*Class B.*—1 vase of a hardy shrub.

First prize, 20s. ; Second, 15s. ; Third, 10s.

*Classes for Lilies.*

To be held on July 6 and 7, 1937.

*Class A.*—8 species and/or hybrids of *Lilium*, 1 stem of each, cut or on plant.

First prize, 60s. ; Second, 45s. ; Third, 30s.

*Class B.*—1 stem of *Lilium*, cut or on plant.

First prize, 20s. ; Second, 15s. ; Third, 10s.

*Classes for Hardy Flowers.*

To be held on July 20 and 21, 1937.

*Class A.*—12 kinds of hardy Flowers, 1 vase of each. Annuals, biennials, shrubby plants and trees and plants which have been wintered under glass excluded ; bulbous plants allowed.

First prize, 60s. ; Second, 45s. ; Third, 30s.

*Class B.*—1 vase of a hardy flower. Annuals, biennials, shrubby plants and trees and plants which have been wintered under glass excluded ; bulbous plants allowed.

First prize, 20s. ; Second, 15s. ; Third, 10s.

*Class for Cacti and Succulents.*

To be held on September 14, 1937.

*Class A.*—A group of Cacti and/or Succulents, applications for space to be made as for non-competitive exhibits.

Prize : A Silver Trophy provided from Mrs. Sherman Hoyt's Prize Fund.

Entry forms, returnable to the Secretary by the Wednesday preceding the date of the competition, will be obtainable from the Secretary next Spring, when a further announcement will be made in the JOURNAL.

The Council hopes that those Fellows who believe in such competitions will show their approval by exhibiting in the various classes.

THE P. D. WILLIAMS MEMORIAL.

As already reported, there was a gratifying response to the appeal for funds for a memorial to the late P. D. WILLIAMS of Lanarth, who was well known as a raiser of Daffodils and as a Rhododendron enthusiast. Contributions continue to reach the Secretary, and the total of the fund at the time of writing is £372 7s. 9d. This sum has been invested as a trust fund, and it is proposed to use the income to provide a certain number of medals each year, which will be known as the P. D. WILLIAMS MEDALS. Meanwhile, the Council has had a design prepared at the Royal Mint, where the die is now being made. The medal will bear a portrait of the late P. D. WILLIAMS, and those who have seen the design believe that his many friends will be delighted with the faithfulness of the portrait.

It has been decided that, for the time being, the medals should be offered in connexion with Daffodils and Rhododendrons in alternate years. In 1937 three medals will be offered for award in a special class at the Daffodil Show. Mr. WILLIAMS was especially interested in red-cupped varieties, and so the class, which will be open to both amateurs and horticultural traders, will call for three stems of each of six *Incomparabilis* and/or *Barrii* varieties with red or orange colouring in the cup. The first prize will be a gold P. D. WILLIAMS MEDAL ; the second prize will be a silver and the third a bronze medal. It is hoped and believed that there will be keen competition among daffodil lovers for the possession of these mementoes of one whose name is honoured wherever daffodils are grown.



## COLORADO BEETLE.

The Ministry of Agriculture and Fisheries desires the attention of the Fellows of the Society to be called to the danger of the Colorado Beetle. As a result of the spread of the Colorado Beetle into the north-east of France and into Belgium, it is probable that it will reach this country by direct flight from time to time.

The measures undertaken for the eradication of the pest on its arrival here will depend for their success on their being carried out in good time. The Ministry of Agriculture is accordingly anxious to obtain as early notification as possible of the discovery of the pest in this country. Potato growers, especially those in Essex, Kent and Sussex, are asked to keep a close watch on their crops and to inform the Ministry as soon as they discover or suspect the presence of the Beetle.

A full description of the Beetle is given in the Ministry's Advisory Leaflet No. 71.

Any yellowish beetle with black stripes or any red or reddish yellow grub that is found feeding upon potato leaves should be regarded with suspicion. When suspected Colorado Beetles or grubs are discovered, specimens should be placed in a tin box (in which no holes should be punched) with a piece of potato leaf, and the box should be sent to the Ministry of Agriculture, 10 Whitehall Place, London, S.W. 1, with a letter stating the exact place where the insects were caught and the name and address of the finder. No other steps should be taken until instructions are received from the Ministry; it is especially important that the crop should *not* be sprayed or interfered with in any way, as this is likely to cause the beetles to spread, and an outbreak possibly affecting only two or three square yards may be distributed throughout the field. Apart from the specimens sent to the Ministry, no beetles or grubs should be removed.

The object of these measures is to keep the insect confined to as small an area as possible, so that it may be eradicated without loss of time.

## HORTICULTURAL COLOUR CHART.

In the May number of the JOURNAL a special leaflet was inserted with regard to the proposed publication of a colour chart for horticultural purposes. As a result of this circular, more than 600 forms of application have been returned, which assures the publication of such a chart as is suggested in two volumes. Further applications from Fellows or Associates who would like to procure a copy of this work will be welcomed. A copy of the leaflet will be sent to anyone who may have mislaid the one circulated.

It is proposed to publish this colour chart in two volumes at a price not exceeding 10s. a volume, *plus* postage, to Fellows.

## WHITE FLY PARASITE.

The demand for the parasite of the Greenhouse White Fly has been so great this year that we regret to say that it has been impossible to supply all those who have applied for it. It is hoped, however, gradually to increase the supply, and every effort will be made to send the parasite to those who have already sent in their applications.

## INSPECTION OF GARDENS.

Many Fellows may not be aware of the terms under which their gardens can be inspected by the Society's Garden Inspector, and advice given thereon. They are set out below, and it will be seen that special arrangements can be made when Fellows living in the same district co-operate.

"The inspection of Gardens belonging to Fellows is conducted by a thoroughly competent Inspector from the Society, who reports and advises at the following cost, viz.: a fee of £3 3s. for one day (or £5 5s. for two consecutive days), together with all out-of-pocket expenses. No inspection may occupy more than two days, save by special arrangement. Should two or more Fellows residing in the same district, with their Gardens within easy reach of one another, desire to have the services of the Garden Inspector, arrangements will be made for such a combined inspection and the fee and expenses divided by consent of those concerned. Fellows wishing for the services of an Inspector are requested to give at least a week's notice and choice of two or three days, and to indicate the most convenient railway station and its distance from their garden. Gardens can only be inspected at the *written* request of the *owner*."

#### FRUIT FOR NAMING.

At this time of the year there is always a large amount of fruit sent to the Committee for naming, and Fellows are reminded of the following instructions which, if adhered to, will materially assist the Committee in their task of identification, and thus save Fellows from being disappointed owing to the Committee being unable to identify the fruit from the samples sent.

"Send at least three perfect specimens of a variety. Do not send until the fruits are mature, and then choose specimens representative of the particular variety. Avoid sending bruised, diseased or abnormal fruits. Include with each variety a typical shoot with foliage. Number each variety, preferably in Roman figures, by marking the skin with a hard pencil, and keep a record of the tree from which it is gathered. Labels are often displaced during transit. Wrap each fruit in paper and pack it carefully and securely in wood-wool or similar material. Flimsy cardboard boxes are usually crushed in the post, while scented-soap boxes taint the fruit and obscure the characteristic flavour. Give all the information you can respecting the age of the trees and how they are grown, *e.g.* indoors or out, as cordons, bushes or standards, etc."

It is a convenience if specimens are sent so as to reach the office by the first post of the morning of a Show day.

#### PICTURES, PLANS, PHOTOGRAPHS, ETC.

With the approach of winter, space will be available at fortnightly Shows for pictures and photographs of plants, flowers, gardens and plans or models of gardens. Regulations with regard to these exhibits may be had on application to the Secretary. The dates of the Shows when these exhibits are permitted are November 10, 24, December 8, 1936, and January 12, 26, February 9 and 23, 1937.

#### HORTICULTURAL SUNDRIES.

The exhibition of Horticultural Sundries will be allowed at the Fortnightly Shows on December 8, 1936, and January 12 and 26, 1937. If space is available, sundries will also be admitted on November 24, 1936.

#### BRITISH FLORAL ART DIPLOMA.

The next examination will be held, as follows :—

Written examination, October 12. Practical Examination, November 17 and 18.

Entries close on Monday, September 14.

The syllabus and entry form may be obtained from the Society's offices on application.

This examination was instituted in 1933 with the object of encouraging and stimulating interest in Floral Art by the establishment of a Diploma, and up to the present 58 Diplomas have been issued to successful candidates.

#### THE GARDENS AT BODNANT.

Fellows visiting North Wales will be glad to know that the Gardens at Bodnant, Tal-y-Cafn, North Wales, are, by Lord ABERCONWAY's permission, open to Fellows of the Society without charge on Tuesday and Friday afternoons throughout the summer from 2 to 5 P.M.

#### THE LATE MR. W. ROBINSON'S GARDEN, GRAVETYE MANOR, EAST GRINSTEAD.

The Forestry Commissioners have asked that the future of Gravetye Manor should be brought to the notice of the Fellows of the Society, as there may be amongst them some who would be interested in this property.

Gravetye Manor was left to the State by the late William Robinson, the celebrated horticulturist. The estate covers about 900 acres, and lies 3 miles south-west of East Grinstead. It includes 408 acres of woodland, the rest being agricultural. The great feature, however, is the Elizabethan Manor House, with its 32 acres of garden and grounds with an alpine meadow and lake.

The Forestry Commission will obtain possession in a month or two when legal formalities have been concluded, and they desire to obtain a suitable tenant for the house and shooting. The gardens are well known and have a world-wide

reputation, and would undoubtedly afford great pleasure to one with knowledge and love of gardens, and means to keep up a garden of its character.

A good aerial picture of the house and grounds has been published in the *Sphere* of June 29, 1936. Fellows interested in the house and grounds are asked to write for further particulars from the Forestry Commission, 55 Whitehall, London, S.W. 1.

#### WISLEY IN SEPTEMBER.

Although this month brings the end of summer and usually the first autumn frosts are registered, the Gardens are yet gay with flowers.

On the hillside the Rose borders continue in bloom, where visitors may note those varieties which give the best autumn display; the large double borders of Dahlias on trial should be seen by everyone interested in these late summer flowers, since both the best of the old and the selected new varieties may be compared side by side. Close by them are the Michaelmas Daisies, also a very large collection showing the wide range of colours and habit now available.

Beside the Alpine House the Gazanias still open their bright Daisy-like blooms on warm days, and a fine specimen of the hybrid shrub *Caryopteris* × *clandonensis* produces its quantities of clear blue flowers against the wall. Some of the earlier autumn Crocuses should also be looked for here.

On the rock garden the principal attractions will be the various autumn Gentians, including *Gentiana Farreri* and *G. Veitchiorum*, of which a number are scattered about in shady parts; with them, liking similar places, are the brilliant *Cyananthus integer* and *C. lobatus* and its several forms, with one or two others recently established. All these with their great Periwinkle-like flowers are most useful at this end of the year for the rock-garden which can provide a suitable position. The pale pink *Roscoea purpurea* var. *pallida* should be seen, in a pocket beside the upper path.

In the Wild Garden there is likely to be little of special interest except, perhaps, the autumn-flowering *Cyclamen neapolitanum* and the tall Willow Gentian (*G. asclepiadea*) which grows here with such freedom, as does also *Gentiana sinoornata* in the Azalea Garden, where wide borders are to be seen which will now be commencing to bloom.

Passing into the Heath Garden and Seven Acres the visitor will find many varieties of Heathers in bloom—Ling, Cornish, Connemara, Bell, and Cross-leaved sorts—and in the surrounding borders the berries of the earlier Barberries and other shrubs which should be grown for this autumn effect are commencing to turn colour, as well no doubt as some of the foliage, both here and in the Wild Garden. The collection of wild roses in Howard's Field, along the path by the River Wey, should be visited this month by those who wish to make a selection of these most attractive shrubs for their collection; they should now be at the height of their fruiting display.

In the Award of Merit garden, as well as at the south side of the Laboratory wall, are groups of *Amaryllis Belladonna* which this month push up their heads of pink flowers on bare stalks; a similar fashion can be found in the collection of hybrid Colchicums situated at the end of the walk by the Peach wall, by the group of *Magnolia grandiflora*.

In the Temperate House, Begonias, Fuchsias, and Pelargoniums will be the chief sources of bloom, with the blue Ipomoea and Tibouchina amongst other climbers and shrubs growing here, while in the Half-hardy House the gorgeous but unfortunately scarcely hardy *Leonotis Leonurus* is prominent, and there are other interesting plants to justify a visit to the house.

#### RECENT PUBLICATIONS.

The attention of Fellows is called to two recent books published by the Society, containing the latest information regarding the cultivation of their respective subjects and on the newest varieties, which should be especially useful for the approaching planting season.

They are :—

Apples and Pears : Varieties and Cultivation in 1934. Price 7s. 6d. post free.

Cherries and Soft Fruits : Varieties and Cultivation in 1935. Price 6s. post free.

The Daffodil Year-book for 1936 appeared in August. Price 5s. in paper cover, 6s. in boards, post free.

# GENERAL MEETINGS.

JULY 2, 1936.

(British Delphinium Society's Show).

**JOINT DELPHINIUM COMMITTEE.**—The Hon. DAVID BOWES-LYON in the Chair, and ten others members present.

## Awards Recommended :—

### *Award of Merit,*

Delphinium: 'Alice Artindale,' for show purposes (votes 9 for, 2 against), shown by Messrs. Wm. Artindale, Nether Green Nursery, Sheffield.

### *Selected for trial at Wisley.*

Delphinium: 'Alice Artindale,' shown by Messrs. Wm. Artindale, Sheffield.

Delphiniums: 'Queen,' 'Donald Allan,' 'Ethereal,' all from Messrs. Blackmore and Langdon, Bath.

Delphiniums: 'Etincelent' and 'Ivory,' from Mr. T. Stevenson, Hillingdon.

## Other Exhibits.

H. F. Sykes, Esq., Almondsbury: Delphinium Seedling.

The Hon. Mrs. Trollope Bellew, Casewick, Stamford: Delphinium 'Casewick.'

Messrs. Chaplin Bros., Waltham Cross: Delphinium 'Jessie Tyser.'

Messrs. Blackmore and Langdon, Bath: Delphiniums 'Porthos' and 'Nell Gwyn.'

Mrs. de Neufville, Whitehall Court, S.W.: Delphinium Seedling 'Belladonna.'

JULY 7, 1936.

## DISCUSSION ON LILIES.

The Discussion was opened by Major F. C. STERN, O.B.E., M.C., F.L.S. (For report see Lily Year Book, 1936.)

**SCIENTIFIC COMMITTEE.**—Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and four other members present.

*Curious Rhododendron aberration.*—Mr. Collingwood Ingram sent a curious aberration of *Rhododendron calophytum* × *R. Fortunei* in which the shoots arising from the base of the flower cluster bore minute flowers, about  $\frac{1}{4}$  inch in diameter, spaced on the bare portion of the stem in the axils of the now fallen scale leaves.

*Twin Rose.*—A curious twin rose was shown in which two flowers side by side, one with three the other with two sepals but otherwise fully developed, stood on the top of a flower stalk which showed no sign of fasciation.

*Deutzia Monbeigii.*—Two forms of this Chinese species were shown for comparison, one with the upper surface of the leaves glossy but still scabrous, the other with the more usual greyish coloration.

*South African bulb.*—A minute flowered bulb from South Africa was referred to Mr. E. G. Baker and also a *Deutzia* shown by Major Stern without a name.

*Epidendrum sp.*—A species of *Epidendrum* shown by Mr. Low was referred to Kew for naming (see p. clx).

*Seeding of Agapanthus africanus with foreign pollen.*—Miss Hollings of Hazeldean, Charlbury, Oxon, sent the following note:

"In the autumn of 1931 an *Agapanthus umbellatus* had a late bud when most of the flowers were over and had set seed. This flower was pollinated from *Lilium auratum platyphyllum*, and formed a hexagonal capsule quite unlike the usual triangular pod. The seed ripened and was collected, but owing to accident the seedlings were lost. Later a solitary seedling came up; this has now formed its flower buds, and is in appearance an ordinary *Agapanthus*. It may possibly be harder than the type, since it stood a frost which killed its parent."

**FRUIT AND VEGETABLE COMMITTEE.**—Mr. E. A. BUNYARD, F.L.S., in the Chair, and ten other members present.

## Exhibits.

Messrs. T. Rivers, Sawbridgeworth, Herts: Strawberries—'Dr. Hogg,' 'Fillbasket,' 'Givon's Late Prolific,' 'Laxton's Latest,' 'Sir Joseph Paxton,' 'Tardive de Leopold,' 'Waterloo'; Plums—'Count Althann's Gage,' 'Yellow Magnum Bonum.'

Mr. M. B. Crane, John Innes Horticultural Institute, Merton : Raspberries—  
Seedling No.  $\frac{15}{31}$  —  $\frac{34}{16}$  (to be seen again) ; Seedling No.  $\frac{9}{29}$  — 124.  
R.H.S. Commerical Fruit Trials, Wisley : Strawberry 'Corvallis.'

**FLORAL COMMITTEE A.**—Mr. J. M. BRIDGEFORD in the Chair, and sixteen other members present.

**Awards Recommended :—**

*Gold Medal.*

To Messrs. Blackmore & Langdon, Bath, for Delphiniums.

*Silver-gilt Banksian Medal.*

To Messrs. Bath, Wisbech, for Pæonies.

To Messrs. Dobbie, Edinburgh, for Roses.

*Silver Flora Medal.*

To Messrs. Allwood, Hayward's Heath, for Border and Perpetual Flowering Carnations.

To Messrs. Barr, London, for herbaceous plants.

To Messrs. Prichard, Christchurch, for herbaceous plants.

To Messrs. Waterer, Sons & Crisp, Twyford, for Japanese Irises, Spiræas and Water Lilies.

*Silver Banksian Medal.*

To Messrs. F. Cant, Colchester, for Roses.

To Mr. J. Douglas, Great Bookham, for Border Carnations.

To Messrs. Engelmann, Saffron Walden, for Carnations.

To Messrs. Hillier, Winchester, for herbaceous plants and shrubs.

To Messrs. Kelway, Langport, for Pæonies and Delphiniums.

To Suffolk Seed Stores, Woodbridge, for herbaceous plants.

To Messrs. Sutton, Reading, for *Phlox Drummondii*.

*Flora Medal.*

To Messrs. B. R. Cant, Colchester, for Roses.

To Mr. G. E. P. Wood, Ashted, for Belladonna Delphiniums.

*Banksian Medal.*

To Mr. W. E. B. Archer and Daughter, Sellindge, for Roses.

To Messrs. Chaplin, Waltham Cross, for Roses.

To Mr. J. F. Cumming, Wisbech, for Scabious.

To Mr. E. Ladhams, Elstead, for Dianthus.

To Mr. E. B. Le Grice, North Walsham, for Roses.

To Letchworth Plants Ltd., Letchworth, for herbaceous plants.

*Award of Merit.*

To Rose 'Princess Marina' (votes unanimous), from Mr. H. Robinson, Hinckley. See p. 392.

To *Scabiosa caucasica* 'Evelyn Braithwaite' for cutting (votes 13 for), from Mr. W. Braithwaite, Leeming Bar. See p. 392.

*Selected for trial at Wisley.*

*Chrysanthemum segetum* fl. pl. 'Yellowstone,' from Messrs. Vis, Enkhuizen, Holland.

**Other Exhibits.**

Mrs. A. F. Barton, Chappel : *Nigella* 'White Dragon.'

Messrs. Bentall, Havering : Roses.

Messrs. Bunyard, Maidstone : old-fashioned Roses.

Burbage Nurseries, Hinckley : Roses.

Messrs. Hayward, Clacton-on-Sea : Dianthus.

Misses Hopkins, Coulsdon : herbaceous plants.

Mr. R. Colpoys Wood, West Drayton : herbaceous plants.

**FLORAL COMMITTEE B.**—Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and eighteen other members present.

**Awards Recommended :—**

*Gold Medal.*

To Messrs. R. Wallace, Tunbridge Wells, for Lilies and other hardy plants.

*Silver-gilt Flora Medal.*

To Mr. W. A. Constable, Southborough, for Lilies.

To Knap Hill Nursery, Woking, for Lilies and other hardy plants.

*Silver-gilt Banksian Medal.*

To Hocker Edge Gardens, Cranbrook, for Lilies.

*Silver Flora Medal.*

To the Rt. Hon. Lord Swaythling, Southampton, for Lilies.

*Flora Medal.*

To Messrs. Perry, Enfield, for Lilies and other hardy plants.

*Banksian Medal.*

To Messrs. Prichard, Christchurch, for rock garden plants.

To Messrs. Russell, Windlesham, for Nymphaeas.

To the Countess of Stair, Stranraer, for Lilies.

*Award of Merit.*

To *Clematis chrysocoma* as a hardy flowering climber (votes 7 for), from Mr. E. Markham, East Grinstead. See p. 389.

To *Clematis* 'Comtesse de Bouchaud' as a hardy flowering climber (votes unanimous), from Mr. E. Markham, East Grinstead. See p. 389.

To *Deutzia pulchra* var. *formosana* as a hardy flowering shrub (votes unanimous), from Lt.-Col. L. C. R. Messel, O.B.E., Handcross. See p. 389.

To *Deutzia Monbeigii* as a hardy flowering shrub (votes unanimous), from the Director, R.H.S. Gardens, Wisley. See p. 389.

To *Lilium* × *Dalhousiana* Dereham variety as a hardy flowering plant (votes 16 for), from Hugh Wormald, Esq., East Dereham. See p. 390.

To *Lilium* 'Mary Swaythling' as a hardy flowering plant (votes 12 for, 2 against), from the Rt. Hon. Lord Swaythling, Southampton. See p. 390.

To *Rhododendron* 'Lady Catherine' as a hardy flowering shrub (votes unanimous), from Sir John F. Ramsden, Bt., Gerrard's Cross. See p. 356.

To *Rosa omeiensis* var. *praecox* as a hardy, ornamental-fruited shrub (votes unanimous), from Major F. C. Stern, Goring-by-Sea. See p. 392.

To *Russelia juncea* as a flowering shrub for the warm greenhouse (votes unanimous), from Lionel de Rothschild, Esq., Exbury. See p. 392.

*Preliminary Commendation.*

To *Lilium pardalinum* 'Dimsdale's Yellow No. 1' as a hardy flowering plant (votes unanimous), from Miss P. Dimsdale, Lechlade.

*Selected for trial at Wisley.*

*Mimulus moschatus*, said to possess the true Musk scent, from Mrs. L. M. Wright, Hayward's Heath.

**Other Exhibits.**

Lord Aberconway, Bodnant: *Vaccinium Delavayi*.

Mr. A. Corderoy, Eltham: rock garden plants.

Dame Alice Godman, Horsham: *Lilium Duchartrei*, *Salvia* sp.

Mr. A. Hansen, New Barnet: rock garden plants.

T. Hay, Esq., Hyde Park: *Anemone rivularis*.

Col. G. H. Loder, Handcross: *Lilium Martagon album*.

London Garden Stores, London, W. C. 1: rock garden plants.

Rev. Prof. E. S. Lyttel, Chilworth: *Lilium langhonsense*.

Mr. E. Markham, East Grinstead: *Clematis crispa*, *Scabiosa* sp.

Lt.-Col. L. C. R. Messel, O.B.E., Handcross: *Deutzia* sp.

Lt.-Col. G. S. F. Napier, Horam: *Lilium pardalinum* × *superbum*, *Lilium* 'Golden Pard', *Lilium pardalinum* × *Parryi* 'Napier's Variety.'

Lionel de Rothschild, Esq., Exbury: *Rhododendron* 'Argosy.'

The Hon. Mrs. Ryder, Beaulieu: *Lilium Roetzlii*, *L. Willmottiae* × *croceum*, *Watsonia* sp.

Major F. C. Stern, Goring-by-Sea: *Deutzia* sp. K.W. 6393.

Messrs. Wallace, Tunbridge Wells: *Tilia platyphyllos* var. *asplenifolia*.

Messrs. Watkins & Simpson, London, W.C.: *Antirrhinum* 'Feltham Mixed.'

**ORCHID COMMITTEE.**—Sir JEREMIAH COLMAN, Bt., in the Chair, and fourteen other members present.

**Awards Recommended:—**

*Lindley Medal.*

To the Rt. Hon. Lord Aberconway, Bodnant, Tal-y-Cafn, for a group of *Cypripedium* × 'Albion' ('Astarte' × *niveum*).

*Award of Merit.*

To *Dendrobium* × 'Nelly Sander' (*Dearei* × *formosum*) (votes 12 for, 1 against), from Messrs. Sanders, St. Albans. See p. 354.

**Other Exhibits.**

Messrs. Armstrong & Brown, Tunbridge Wells: a group.

Messrs. Stuart Low, Jarvis Brook: a group.

**JOINT IRIS COMMITTEE.**—Major F. C. STERN in the Chair, and six other members present.

*Selected for trial at Wisley.*

Iris Kaempferi 'Towa no Koe,' 'Shozui,' 'Kumoma Fuyi,' and 'Uyekis Aigasa,' shown by L. de Rothschild, Esq., Exbury, Southampton.

**Other Exhibits.**

L. de Rothschild, Esq.: Iris Kaempferi 'Onigashima,' 'Uyekis Kamakura Blue,' 'Yume no Ukihashe,' 'Benifayo,' 'Ishibashi,' 'Okitsu nami,' 'Suma no Ura' and 'Shimei no Oki.'

**JOINT PERPETUAL FLOWERING CARNATION COMMITTEE.**—Mr. J. M. BRIDGEFORD in the Chair, and six other members present.

**Exhibit.**

Carnation 'White Gaiety,' from Mr. T. Stevenson, Colham Green Nurseries, Hillingdon.

**JOINT BORDER CARNATION COMMITTEE.**—Mr. BRIDGEFORD in the Chair, and ten other members present.

*First-class Certificate.*

Border Carnation 'Renée Nicholls' for show and open border (votes 6 for, 2 against), shown by Messrs. Allwood, Hayward's Heath. See p. 389.

*Selected for trial at Wisley.*

Border Carnations 'Harmony,' 'Cottage Supreme' and 'Cottage Fancy,' shown by Messrs. Allwood, Hayward's Heath.

Border Carnation 'Seedling No. 50,' shown by Mr. H. A. Knapton, Fairfield Road, Orpington.

**Other Exhibits.**

Mr. Wm. J. Ryder, Ickenham, Middlesex: Border Carnation 'Ickenham Beauty.'

Mr. H. A. Knapton, Orpington: Border Carnation, 'Seedling No. 53.'

**JOINT ROCK GARDEN PLANT COMMITTEE.**—Major F. C. STERN, F.L.S., O.B.E., M.C., in the Chair, and seven other members present.

**Award Recommended:—**

*Award of Merit.*

To *Campanula calaminthifolia* as a flowering plant for the alpine house (votes unanimous), from the Director, R.H.S. Gardens, Wisley. See p. 389.

**Other Exhibits.**

Mrs. Cuthbert Blundell, Hayward's Heath: *Campanula* 'Slaugham White.'

Mr. A. Corderoy, Eltham: *Campanula pusilla* × *rotundifolia*.

John Innes Hort. Inst., Merton: *Campanula Broussonetiana*.

Mrs. H. Milford, Chedworth: *Romulea* sp.

JULY 14, 1936.

**JOINT BORDER CARNATION COMMITTEE.**—Major G. CHURCHER in the Chair, and nine other members present.

**Awards Recommended:—**

*Preliminary Certificate.*

To Border Carnation 'Juna' (votes unanimous), shown by Messrs. Allwood, Haywards Heath.

To Border Carnation 'Annie Smith' (votes unanimous), shown by Mr. G. Smith, Bournville, Birmingham.

To Border Carnation 'Seedling No. 54' (votes unanimous), shown by Mr. H. A. Knapton, Orpington.

*Selected for trial at Wisley.*

Border Carnation 'Florence Turner,' shown by Mr. E. T. Turner, Malden, Essex.

Border Carnations 'Pink Braes,' 'Diplomat,' 'Alpink,' 'Juna,' and 'Robustus,' all shown by Messrs. Allwood, Haywards Heath.

Border Carnation 'Annie Smith,' shown by Mr. G. Smith, Bournville, Birmingham.

Border Carnation 'Seedling No. 54,' shown by Mr. H. A. Knapton, Orpington.

Border Carnation 'Betty Thain,' shown by Mr. R. Thain, Guildford.

**Other Exhibits.**

Mr. E. Brown, Wood Green: Border Carnation 'Marie Pamela.'

Messrs. Allwood, Haywards Heath: Border Carnation 'Sincerity.'

**JOINT DELPHINIUM COMMITTEE** (AT ROUNDHAY SHOW, LEEDS).—Mr. G. W. LEAK, V.M.H., in the Chair, and seven others members present.

*Selected for trial at Wisley.*

Delphinium 'Lady Joan,' shown by Messrs. Blackmore and Langdon, Bath.

**Other Exhibits.**

Mrs. J. Milner, Roundhay, Leeds: Delphinium 'Iceberg.'

H. S. Wainwright, Esq., Roundhay, Leeds: Delphinium 'Cleopatra.'

Messrs. Blackmore & Langdon, Bath: Delphinium 'Stanley.'

Mr. R. V. Roger, Pickering: Delphinium 'Seedling.'

JULY 21, 1936.

**CLAY CHALLENGE CUP COMPETITION.**

*The Clay Challenge Cup*, which was offered for award for a new Rose possessing the true old rose scent, was not awarded.

A lecture was given by Miss E. W. JAMESON on "The Preservation of Vegetables for Home Use" (see p. 365).

Chairman, Mr. L. NOËL SUTTON.

**SCIENTIFIC COMMITTEE.**—Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and seven other members present.

*Epidendrum leucochilum.*—Mr. Cotton reported that the *Epidendrum* taken for identification (p. clvi) was *Epidendrum leucochilum* from Columbia and Venezuela.

*Parasitic plants.*—From Llanfoist, nr. Abergavenny, Mr. Stoddart sent examples of *Oenothera macrocarpa* on which was growing a broomrape which he supposed was *Orobanche coerules* which might be the first record for his county. He also sent a *Cuscuta* growing on *Nierembergia hippomanica* and reported that he had also found it on *Androsace Walkinsii*, a *Lewisia* species, and *Delphinium chinense*.

*Wind damage on Catalpa bignonioides.*—Mr. Hales exhibited leaves damaged by recent gales. In many ways this simulated the damage frequently reported as being due both to wind and salt from sea breezes. In this case the entire damage was due to the wind.

*Hormones.*—Dr. Tincker exhibited photographs and treated plants showing the effect of hormones on tomatoes. The hormones are applied in lanolin (*Adeps lanae hydros*) by smearing the paste on the stem. Ready response is obtained with tomato plants. The symptoms shown in order are twisting and bending of the petioles, and rapid secondary growth in stem thickness followed by root initiation. In extremely rapid cases the root initiation is visible within four or five days.

The chemicals tested are hetero-auxin ( $\beta$ -indolylacetic acid) concentration 1 part in 1000;  $\gamma$ -naphthalene acetic acid 1 part in 100 proves toxic; and phenylacetic acid 1 part in 100. The order of effectiveness at equal concentrations is as stated. Although  $\beta$ -indolylacetic is so effective, isoindolinone-3-acetic has so far proved inactive.

The paste method is useful in propagating for herbaceous material.

Professor Weiss reported on the effect of hetero-auxin applied in a unilateral manner to the stem of the tomato. It caused rapid cell division and production of new wood which was not lignified. The rapid increase in growth was accompanied by radial cell wall division of the outer tissues, and a utilization of the starch in the starch sheath.

The root initials formed had every characteristic of roots both in their origin and nature.

*Notospartium glabrescens.*—A *Notospartium* from Mr. Archibald Evans was identified as *Notospartium glabrescens*.

*Chlorogalum pomeridianum.*—A plant from Col. Stephenson Clarke's garden was identified as *Chlorogalum pomeridianum*.

**FRUIT AND VEGETABLE COMMITTEE.**—Mr. E. A. BUNYARD, F.L.S., in the Chair, and seven other members present.

**Awards Recommended :—**

*Hogg Medal.*

To Messrs. J. C. Allgrove, Middle Green, Langley, Slough, for an exhibit of Gooseberries, Black and White Currants.



**Other Exhibits.**

Imperial Fruit Show, Ltd.: South African Oranges and Grape Fruit, in season.

Messrs. T. Rivers, Sawbridgeworth, Herts: Plums: 'Primate,' and 'Golden Transparent.'

R.H.S. Commercial Fruit Trials, Wisley: Berries: 'Youngberry' and 'Newberry' (Phenomenal Berry).

**FLORAL COMMITTEE A.**—Mr. J. M. BRIDGEFORD in the Chair, and fifteen other members present.

**Awards Recommended :—***Silver-gilt Banksian Medal.*

To Messrs. Bolton, Birdbrook, for Sweet Peas.

To Messrs. Daniels, Norwich, for Larkspurs.

*Silver Flora Medal.*

To Messrs. Dickson, Newtownards, for Roses.

To Messrs. Prichard, Christchurch, for herbaceous plants.

To Messrs. Waterer, Sons & Crisp, Twyford, for herbaceous plants.

*Silver Banksian Medal.*

To Messrs. B. R. Cant, Colchester, for Roses.

To Mr. E. Ladhams, Elstead, for herbaceous plants.

To Messrs. Lowe, Beeston, for Roses.

To Messrs. Russell, Windlesham, for Phlox, Water Lilies and Cannas.

*Flora Medal.*

To Messrs. Blackmore & Langdon, Bath, for Phlox.

To Messrs. F. Cant, Colchester, for Roses.

To Messrs. Chaplin, Waltham Cross, for Roses.

To Messrs. Engelmann, Saffron Walden, for Carnations.

To Messrs. Perry, Enfield, for Hemerocallis and other herbaceous plants.

*Banksian Medal.*

To Messrs. Allwood, Haywards Heath, for Carnations.

To Mr. W. E. B. Archer & Daughter, Sellindge, for Roses.

To Messrs. Bentall, Havering, for Roses.

To Mr. J. F. Cumming, Wisbech, for herbaceous plants.

To Messrs. Forbes, Hawick, for Phlox and Delphiniums.

To Messrs. Gibson, Cranleigh, for Phlox.

To Messrs. Hansen, New Barnet, for herbaceous plants.

To Messrs. Kelway, Langport, for herbaceous plants.

To Mr. E. B. Le Grice, North Walsham, for Roses.

To Mr. G. E. P. Wood, Ashted, for Delphinium Belladonna.

*Selected for Trial at Wisley.*

*Anthemis tinctoria* 'Nancy Perry,' from Messrs. Perry, Enfield.

*Chrysanthemum coronarium* fl. pl. 'Golden Beam,' from Messrs. Hurst, London.

*Streptocarpus grandis* × blue garden hybrid, from The John Innes Horticultural Institution, Merton.

**Other Exhibit.**

Mr. H. A. Brown, Chingford: Fuchsias.

Mr. W. A. Collier, Redbourn: Delphinium, unnamed (to be seen again); *Lythrum Salicaria* 'Deacon.'

Messrs. Dickson, Newtownards: Roses 'Dickson's Bouquet' and 'Dickson's Perfection.'

Messrs. Easlea, Leigh-on-Sea: Rose 'Melita.'

Misses Hopkins, Coulsdon: herbaceous plants.

Messrs. Hurst, London: *Chrysanthemum segetum* fl. pl. 'Golden Beauty' and 'Primrose Beauty.'

Mr. A. C. B. Ker, Weybridge: Roses.

Letchworth Plants Ltd., Letchworth: herbaceous plants and *Primula Florindae* 'Letchworth variety.'

Mr. B. W. Pettitt, Sible Hedingham: Delphinium 'Berwinpet.'

Messrs. Wheatcroft, Nottingham: Roses.

Mr. R. Colpoys Wood, West Drayton: herbaceous plants.

**FLORAL COMMITTEE B.**—Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and fifteen other members present.

**Awards Recommended :—**

*Silver Banksian Medal.*

To Messrs. Hillier, Winchester, for flowering shrubs and hardy plants.

*Flora Medal.*

To Messrs. H. J. Haskins, Bournemouth, for Clematis.

To Hocker Edge Gardens, Cranbrook, for Lilies and other hardy plants.

To Messrs. Prichard, Christchurch, for rock garden and border plants.

*Banksian Medal.*

To Messrs. W. G. Haskins, Bournemouth, for Clematis.

To Messrs. Neale, Worthing, for succulents.

To Mr. G. E. Welch, Cambridge, for rock garden plants.

*Award of Merit.*

To *Aponogeton Kraussianum* as a half-hardy aquatic flowering plant (votes 8 for, 4 against), from Messrs. Perry, Enfield. See p. 389.

To *Eucryphia Billardieri* as a tender flowering shrub (votes unanimous), from Lionel de Rothschild, Esq., Exbury, Southampton. See p. 390.

To *Eugenia apiculata* as a hardy flowering shrub (votes unanimous), from Viscountess St. Cyres, Lymington. See p. 390.

To *Lilium Henryi* var. *citrinum* as a hardy flowering plant (votes unanimous), from Messrs. Wallace, Tunbridge Wells. See p. 390.

To *Sambucus racemosa* as a hardy flowering shrub (votes 14 for, 2 against), from Lionel de Rothschild, Esq., Exbury. See p. 392.

*Selected for Trial at Wisley.*

Clematis 'Little Nell,' C. 'Splendida,' C. 'Perle d'Azur,' all from Mr. Ernest Markham, East Grinstead.

**Other Exhibits.**

Mrs. E. L. Crowe, Henley-on-Thames : *Scabiosa* sp.

Messrs. Hurst, London, E.C. 3 : *Collomia grandiflora*.

Dr. T. Inglis, Edinburgh : Lily hybrids.

Mr. E. Ladhams, Elstead : *Plagianthus Lyallii*.

Lady Lawrence, Dorking : *Hibiscus grandiflorus ruber*.

Mr. E. Markham, East Grinstead : Clematis 'Madame Edouard André.'

Messrs. Perry, Enfield : *Aponogeton spathaceum junceum*, *Hemerocallis fulva* var. *rosea*.

Mrs. Shawe, Christchurch : *Coriaria terminalis* var. *xanthocarpa*.

Viscountess St. Cyres, Lymington : *Plagianthus Lyallii*, *Clethra arborea*.

Messrs. Wallace, Tunbridge Wells : *Rhododendron Simsii* var. *eriocarpum*.

**ORCHID COMMITTEE.**—Sir JEREMIAH COLMAN, Bt., in the Chair, and twelve other members present.

**Award Recommended :—**

*Preliminary Commendation.*

To *Miltonia* × 'Swinburn,' Orchidhurst var. ('T. B. Armstrong' × 'Wm. Pitt') (votes unanimous), from Messrs. Armstrong & Brown, Tunbridge Wells. Flower rich ruby-crimson.

**Other Exhibit.**

Messrs. Charlesworth, Haywards Heath : a group.

**JOINT BORDER CARNATION COMMITTEE.**—Mr. J. M. BRIDGEFORD in the Chair, and five other members present.

*Selected for trial at Wisley.*

Border Carnation 'Cottage Rose,' shown by Messrs. Allwood, Haywards Heath:

**Other Exhibits.**

Mr. J. Charrington, Broad Oak End, Hertford : Border Carnation 'Wendy.'

Messrs. Allwood, Haywards Heath : Border Carnation 'Cottage Clove.'

**JOINT ROCK GARDEN PLANT COMMITTEE.**—Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and six other members present.

**Award Recommended :—**

*Preliminary Commendation.*

To *Primula chlorodryas* as a flowering plant for the rock garden and alpine house (votes unanimous), from Lord Aberconway, Bodnant.

## DONATIONS TO THE SOCIETY'S GARDENS, WISLEY, 1935 (Cont.).

OGILVIE, L., Dundry, Bristol; Cuttings of *Spiraea bella*. OVERBECK, O., Salcombe, S. Devon; Quantity of tree and shrub seeds. OXFORD, UNIVERSITY OF, Inst. of Agric. Engineering; Plants of *Salvia Grahamii*. PAGE, C., Hayward's Heath, Sussex; Plants of nine species of *Rosa*; cuttings of *Rosa morica*. PAGET, Miss, Tilford, Farnham, Surrey; Plants of *Paeonia* and *Juniperus*. PALMERO BOTANIC GARDEN, Sicily; Collection of seeds. PAM, Major A., Broxbourne, Herts; Collection of bulbs or tubers from Cyprus and the Argentine; plants, cuttings, or seeds of various sorts. POPE BROS., Wokingham, Berks; Grafts of Apple 'Winter King'. PORTER, G. P., Westmoors, Dorset; Collections of Saxifrages and other plants for the rock garden. PORTER, J. W., Dundonald, Co. Down; Plants of varieties of *Calluna vulgaris* and *Erica mediterranea*. PRESTON, K. B., Ripley, Surrey; Seedling of *Sequoia gigantea*. PRITCHARD, W. B., Llandudno, N. Wales; Seeds of *Ranunculus Lyallii* and *Solanum aviculare*; collections of seeds and cuttings. RAMSBOTTOM, J., British Museum, S.W. 7; Collections of seeds and bulbs from Bhutan (LUDLOW & SHERRIFF); seeds from Tanganyika. READING, UNIVERSITY OF, Berks; Buds of *Prunus serrulata albo-rosea*. RENTON, J., Perth, N.B.; Plants of *Cyananthus Oreocharis*, and *Primula* species for rock garden. REUSS, L., Woking, Surrey; Seeds of 'White Moon Creeper'. RHIND, Mrs., Alveston, Glos.; Collection of New Zealand seeds. RIVERS, T., & SON, Sawbridgeworth, Herts; Grafts of Pears. ROCHDALE, Lord, Highgate, N.; Cuttings of *Felicia* sp., three Veronicas. ROGER-SMITH, Dr. H., Capel, Surrey; Plant of *Dioscorea pyrenaica*. ROMÉ BOTANIC GARDENS, Italy; Collection of seeds. ROMNEY, Earl of, Gayton Hall, Norfolk; Bulbs of *Iris reticulata*; plants of *Rosa lutea maxima*, *Verbena* sp. ROSE, Miss, Lechlade, Glos.; Seeds of shrub from Khartoum. ROTHSCHILD, L. DE, Exbury, Southampton; Plants and seedlings of Rhododendrons. ROY, Dr. O., Montreal, Canada; Bulbs for identification. RUSSELL, Messrs. L. R., Richmond, Surrey; *Ceanothus* and other plants. SANDEMAN, F. D. S., Kingennie, Angus, N.B.; Plants of *Primula Winteri*; seeds of *Gentian*, *Primula*, and *Meconopsis* species. SCHOMBERG, R. C. F., Ross, Herefordshire; Bulbs and seeds from Kashmir. SCHREIBER, Capt. F. G., London, S.W.; Seeds of *Sophora tetraptera*. SHELDON, W. G., Oxted, Surrey; Plants, seeds, and seedlings from Teneriffe and elsewhere; collection of *Crocus* species. SIMMONDS, A., West Clandon, Surrey; Grafts of Apple; plants of *Helianthus* 'Monarch'; cuttings of *Caryopteris*  $\times$  *clandonensis*; seeds of *Idesia polycarpa*. SIMMONDS, H., & SONS, King's Langley, Herts; Plant of *Cotoneaster hybrida pendula*. SKINNER, F. L., Dropmore, Manitoba; Collection of seeds. SLESSOR, Major P., Francis Street, S.W. 1; Seeds from Australia and New Zealand. SLOCOCK, Messrs. W. C., Woking; Collection of hybrid Rhododendrons. SMILEY, Lady, Wentworth, Surrey; Plant of *Bougainvillea*; *Echium* sp. ?; cuttings of *Lonicera splendida*. SMITH, Prof. H., University of Upsala, Sweden; Collection of seeds from China (per W. T. STEARN, R.H.S., London). SMITH, C., & SONS, Guernsey; Plants of *Berberis actinacantha*, *Mahonia napaulensis* var. 'Maharajah'. SMITH, Mrs. L., Chilworth, Surrey; Plant of *Clematis* sp.; cuttings of *Dianthus*, *Escallonia*, and *Pentstemon*. SMITH, Prof. Sir W. W., Royal Botanic Gardens, Edinburgh; Seed of *Pernettya* ? SOPPER, Lt.-Col. F., Easter Aberchelder, Inverness; Seeds of *Meconopsis* and *Primula* species. SPARKS, Mrs., Dorking; Plant of *Pelargonium* sp. STEARN, W. T., R.H.S., London, S.W. 1; Fruit of *Rehderodendron*. STERN, Major F. C., Goring-by-Sea, Sussex; Collection of seeds. STEPHENSON, Mrs., Stillorgan Road, Co. Dublin; Plant of *Polyanthus*. STEVENSON, J. B., Ascot; Collection of dwarf Rhododendron species. STOOKE, J. E. H., Hereford; Seeds of *Lilium* species; bulbs of hybrid *Lilium*. STRASBOURG UNIVERSITY BOTANIC GARDEN, France; Collection of seeds. STREETER, F., Petworth, Sussex; Cuttings of *Cheiranthus* 'Moonlight'. STRUTT, Mrs. C. W., Heston, Middlesex; Seeds of shrub from Nigeria. SUTTON & SONS, Reading; Collection of seeds, mainly of annual plants. SWEDISH DENDROLOGICAL SOCIETY, Stockholm; Plants of *Anemone Hepatica* vars. TASCHKENT UNIVERSITY BOTANIC GARDEN, Central Asia; Collection of seeds. THERKILDSEN, K., Kew, Southport; Plants of *Roscoea*, Rose 'Comtesse Vandal', and *Thymus*. THOMAS, G. W., Hea Moor, Penzance; Seeds of *Mahonia napaulensis*. THOMPSON, Mrs. H. P., Weybridge, Surrey; Seeds of alpine plants. TINCKER, M. A. H., R.H.S., Wisley; Seeds of *Antigonon leptopus*, *Gordonia obtusa*, *Jatropha Curcas*. TIPPING, Mrs. LL,

Godalming, Surrey; Collection of seeds from Australia. TRACEY, Mrs., Wimborne, Dorset; Bulbs of *Leucocoryne* and *Ornithogalum*. TROTTER, R. D., Ockley, Surrey; Plants of *Malus*, *Escallonia*; cuttings of various plants; seeds of *Althaea*, *Crataegus*, *Coloneaster*, *Euonymus*, and *Sorbus*. TUCKER, R., & Co., London, E.C.; Bulbs of *Lilium longiflorum* var. *eximium*. TUNNARD, H. B., Banstead, Surrey; Plants of *Cotyledon*, *Sedum*, and *Sempervivum* species. VIENNA, BELVEDERE BOTANIC GARDEN, Austria; Collection of seeds. VILMORIN-ANDRIEUX ET CIL, Messrs., Verrières-le-Buisson, France; Collection of shrub seeds. WAGENINGEN, ARBORETUM OF THE UNIVERSITY, Holland; Seeds of shrubs. WAKEHURST, Lord, Ardingly, Sussex; Collection of shrubs. WALPOLE, E. H., Mt. Usher, Co. Wicklow; Plant of *Pinus Montezumae*. WARBURG, Sir O., Headley, Epsom; Plants of *Berberis*, *Ceanothus*, and *Gentian*; seeds of *Cladanthamnus*. WARD, Miss A., Kensington Gate, W. 8; Seeds from South Africa. WARD, Capt. F. K.; Collection of seeds from the Naga Hills, Assam. WAR GRAVES IMPERIAL COMMISSION, Ganakkah (per the British Embassy, Constantinople); Seeds of *Astragalus Durhamii*. WARLEY PLACE GARDENS, Great Warley, Essex; Collection of seeds. WATKINS & SIMPSON, Messrs., Drury Lane, W.C. 2; Collections of seeds of annual plants. WATSON, A. K., Acle, Norfolk; Plants of hybrid *Monibretias*. WATT, J. C., Aberdeen, N.B.; Seeds of *Magnolia globosa*, *Primula Calderiana*. WEATHERSEED, S. M., St. Leonard's-on-Sea, Sussex; Seeds of *Sophora tetralpera*. WEBB, Miss, Knock, Belfast; Seeds from Switzerland; bulb of *Lilium*. WEEKS, A. G., Limpsfield, Surrey; Plants of *Gentian* species, and *Rhododendron pemakoense*; seedlings of *Helleborus* and *Meconopsis* species. WELLINGS, E. H., Chigwell, Essex; Collection of Californian shrub seeds; plant of *Calonyction aculeatum*?. WHARTON, J. R., Ledbury, Herefordshire; Seeds of *Abies bracteata*. WHITE, Messrs. H., Sunningdale, Surrey; Plant of *Coloneaster conspicua*. WILKIN, H. T., Raynes Park, S.W.; Plant of *Monsonia speciosa*. WILLIAMS, Mrs. A. T., Iwer Heath, Bucks; Seeds of *Ranunculus Lyallii*. WILLIAMS, C. T., Abbot's Leigh, Bristol; Plants of *Pterostyrax hispida*, *Schizophragma integrifolium*. WILLIAMS, G. T., Perranwell, Cornwall; Seeds of *Magnolia obovata*. WILLIAMS, J. C., Caerhays Castle, Cornwall; Seeds of *Rhododendrons*, *Quercus*, and *Ligustrum*; collection of shrub cuttings. WILLIAMS, P. D. (the late), St. Keverne, Cornwall; Seeds of *Magnolia sinensis*; bulbs of *Narcissus* 'Tunis.' WOLMER, Lord, Liss, Hants; Grafts of Apple 'Maiden's Blush.' WOOD, F. E., Bettws-y-coed, N. Wales; Seeds from the Karakoram mountains. YOUNG, Miss E. L., Letchworth, Herts; Buds of Apple 'Young's Pinello.' YOUNG, R. P., Bourton-on-the-Water, Glos; Plant of *Dicksonia* sp. ZAGREB BOTANIC GARDEN, Jugo-Slavia; Collection of seeds.

# EXTRACTS FROM THE PROCEEDINGS

## OF THE

### ROYAL HORTICULTURAL SOCIETY.

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#### NOTICES TO FELLOWS.

##### SUBSCRIPTIONS.

Fellows and Associates are reminded that anyone elected to the Society between now and the close of the year will enjoy the privileges of Fellowship for the remainder of the year 1936 and will not be required to pay a further subscription until January 1, 1938. Back numbers of the monthly parts of the JOURNAL may be obtained by Fellows at 9d. a number.

##### FRUIT FOR NAMING.

At this time of the year there is always a large amount of fruit sent to the Committee for naming, and Fellows are reminded of the following instructions which, if followed, will materially assist the Committee in their task of identification, and thus save Fellows from being disappointed owing to the Committee being unable to identify the fruit from the samples sent.

"Send at least three perfect specimens of a variety. Do not send until the fruits are mature, and then choose specimens representative of the particular variety. Avoid sending bruised, diseased or abnormal fruits. Include with each variety a typical shoot with foliage. Number each variety, preferably in Roman figures, by marking the skin with a hard pencil, and keep a record of the tree from which it is gathered. Labels are often displaced during transit. Wrap each fruit in paper and pack it carefully and securely in wood-wool or similar material. Flimsy cardboard boxes are usually crushed in the post, while scented-soap boxes taint the fruit and obscure its characteristic flavour. Give all the information you can respecting the age of the trees and how they are grown, *e.g.* indoors or out, as cordons, bushes, or standards, etc."

It is a convenience if specimens are sent so as to reach the office by the first post of the morning of a show day.

##### PICTURES, PLAYS, PHOTOGRAPHS, ETC.

With the approach of winter, space will be available at Fortnightly Shows for pictures and photographs of plants, flowers, gardens and plans or models of gardens. Regulations with regard to these exhibits may be had on application to the Secretary. The dates of the Shows when these exhibits are permitted are November 10 and 24, December 8, 1936, and January 12 and 26, February 9 and 23, 1937.

##### HORTICULTURAL SUNDRIES.

The exhibition of Horticultural Sundries will be allowed at the Fortnightly Shows on December 8, 1936, and January 12 and 26, 1937. If space is available, they will be admitted on November 24, 1936.

##### UNATTENDED EXHIBITS

Attention is called to the rules for unattended exhibits. The Society's officers will, if necessary, unpack and stage small exhibits if the Secretary has been notified beforehand of their coming, and if the owner is unable to accompany them, but in no case can the Society undertake or be responsible for their repacking and return.

# CONFERENCES.

In view of the fact that next year is Coronation Year, there will be no Conference held by the Society, but for 1938 a Conference is being considered, the subject of which will be announced later. In 1939 it has been decided to hold a Conference in co-operation with the Rhododendron Association on Rhododendrons.

# CALENDAR.

*October 6, 1-7.30 P.M., and October 7, 10 A.M. to 4 P.M.* Fruit and Vegetable Show (see special notice below). At this Show there will be a special exhibit staged from the Gardens at Wisley illustrative of pests and diseases of Fruit and Vegetables.

At 3.30 P.M. on October 6 a lecture will be given in the Lecture Room of the New Hall by Mr. F. J. ROSE on "Grapes for the Small Garden."

*October 13, 1-6 P.M.* Fortnightly Show of flowers in season.

At 3.30 P.M. on October 13 a lecture will be given in the Lecture Room of the New Hall by Monsieur G. TRUFFAUT on "Soil Science Progress applied to Horticulture."

At 4.30 P.M. in the Restaurant of the Old Hall the Lily Group will meet to discuss "Propagation of Lilies by Scales."

*October 27, 1-7.30 P.M., and October 28, 10 A.M. to 4 P.M.* Fortnightly Meeting and Show. Orchids, Stove and Greenhouse Plants and Berried Shrubs will be the principal features at this Show (see special notice, p. clxvii).

At 3.30 P.M. on October 27 the first of the Masters Memorial Lectures of the year will be given by Dr. R. N. SALAMAN in the Lecture Room of the New Hall, on "The Potato in its Early Home and its Introduction into Europe."

*November 5, 1-7.30 P.M., and November 6, 10 A.M. to 5 P.M.* National Chrysanthemum Society's Show in the New Hall. Fellows' tickets admit free.

*November 10, 1-5 P.M.* Fortnightly Meeting and Show of flowers in season.

At 3.30 P.M. on November 10 the second of the Masters Memorial Lectures of the year will be given by Dr. R. N. SALAMAN in the Lecture Room of the New Hall, on "The Potato in its Early Home and its Introduction into Europe."

*November 11 and 12, 2-4 P.M.* Practical Demonstration at Wisley (weather permitting) on the planting of fruit trees and roses (see special notice, p. clxvii).

*November 24, 1-5 P.M.* Fortnightly Meeting and Show of flowers in season in the New Hall.

In the Old Hall the British Carnation Society holds its Show on November 24 from 1-7.30 P.M., and on November 25 from 10 A.M. to 5 P.M. Fellows' tickets admit free.

At 3.30 P.M. on November 24 a Lecture will be given in the Lecture Room of the New Hall by Mr. J. WOOLMAN on "Newer Chrysanthemums."

# HALL LETTINGS.

The Medical Exhibition will be held in the New Hall from October 19 to 23. Anyone interested in this may apply for particulars to Mr. R. S. ELY, The British & Colonial Druggist, Ltd., 194-200 Bishopsgate, London, E.C. 2.

A Sale of Work, in aid of Church work at home and abroad, will be held in the Old Hall on November 4 and 5, particulars of which may be obtained from Mr. A. W. BARTLETT, 6 New Square, Lincoln's Inn, W.C. 2.

On November 11 and 12 Our Dumb Friends' League will hold their annual Fair in the Old Hall. Any inquiries should be addressed to the Secretary, Our Dumb Friends' League, 72 Victoria Street, London, S.W. 1.

On November 18 and 19 a Bazaar will be held in aid of the Reconstruction Fund of the Hospital for Sick Children, Great Ormond Street, in the New Hall. Particulars may be obtained from the Hon. MARGARET BIGGS, the Hospital for Sick Children, 25 Connaught Square, London, W. 2.

An Exhibition of Applied Arts and Handcrafts, which Fellows will remember has on former occasions been held in the Society's Hall, will be held from November 26 to December 10. Particulars may be obtained from Miss N. E. ISAAC, 26 Eastcastle Street, Oxford Circus, London, W. 1.

On November 27 a Children's Market will be held in the New Hall in aid of the League of Mercy. Particulars may be obtained from Miss EVA MILNES, Secretary, the League of Mercy, 12 Whitehall, London, S.W. 1.

# FRUIT AND VEGETABLE SHOW.

The Fruit and Vegetable Show will be held this year on October 6 and 7 in the New and Old Halls of the Society. It is a Show at which the competition

is usually very keen, and Fellows interested are asked to apply to the Secretary for the special schedule.

Four Challenge Cups are to be competed for at this Fruit and Vegetable Show :

- (1) The George Monro Memorial Cup, which is offered for the best exhibit of Grapes shown by an amateur.
- (2) The Gordon-Lennox Cup, which is offered for the most meritorious display of fruit staged by an amateur in the competitive classes.
- (3) The Affiliated Societies' Cup for Fruits, awarded for the best exhibit of fruits staged by an Affiliated Society.
- (4) The Society's Vegetable Challenge Cup, which is offered for award to the competitor who secures the greatest number of prize-points in the classes for vegetables.

The following Cups are offered for award outright :

- (1) The Riddell Trophy, which is offered for award in the class for a table of vegetables.
- (2) The Sutton Vegetable Cup, which is offered for the best exhibit of twelve distinct kinds shown by an amateur.

Full particulars with regard to these Cups may be found in the special schedule.

#### ORCHID CHALLENGE CUP AND TROPHIES.

The Fortnightly Show on October 27 and 28 is the occasion for the award of a Challenge Cup which is offered for the best group of Orchids exhibited in a space not exceeding 60 square feet by an amateur who employs not more than three assistants in the Orchid houses, including the head gardener. Entries for this competition should be received not later than by the first post on Wednesday, October 21, on special forms obtainable from the Secretary on application.

Two Orchid trophies, presented by the Orchid Trade, will also be competed for : one to be awarded for the best twelve Orchids, not more than two of any one genus, exhibited by an amateur who employs not more than two growers, including the head gardener, in his Orchid houses ; the other for the best six Orchids exhibited by an amateur who employs not more than one Orchid grower or gardener. Entry forms may be had on application to the Secretary, and should be sent in to arrive not later than by the first post on Wednesday, October 21.

#### PRACTICAL DEMONSTRATION AT WISLEY.

A demonstration on the planting of fruit trees and Roses will be given at Wisley on November 11 and 12 from 2 to 4 P.M. (weather permitting), and Fellows who intend to be present are asked to inform the Director, R.H.S. Gardens, Wisley, Ripley, Surrey, beforehand, mentioning on which day they will attend, in order that adequate arrangements may be made.

#### THE JONES-BATEMAN CUP FOR RESEARCH IN FRUIT-GROWING.

In 1920 Miss L. JONES-BATEMAN, of Cae Glas, Abergele, presented to the Royal Horticultural Society a valuable silver-gilt replica of the Warwick Vase to be used for the encouragement of fruit production. It is accordingly decided to offer it triennially for researches in the growing of Hardy Fruits, Figs, Grapes and Peaches in the open or under glass, and it is available for award in 1936.

Candidates should submit accounts of their work by October 31. The work dealt with must have been carried out by the candidate in the United Kingdom mainly during the past five years. The Cup will be held for three years by the successful candidate who must give a bond for its safe return, and when the Cup is relinquished the holder will receive a commemorative gold medal. The holder will be eligible to compete on the next or any succeeding occasion.

The Assessors will be three, two appointed by the Royal Horticultural Society and one by the National Farmers' Union, and they will report to the Council of the Royal Horticultural Society upon the originality and comparative potential value to the fruit-growing industry of the work of the candidates.

The Council of the Royal Horticultural Society will award or withhold the Cup at its discretion.

#### SMALL EXHIBITS FROM FELLOWS.

Fellows are invited to exhibit interesting or well-grown plants, flowers, fruits or vegetables on the special small exhibits table. Any Fellow who desires to stage an exhibit consisting of not more than three pots, vases, or dishes may

do so at any Fortnightly Meeting, although he has not applied for space beforehand. Such exhibits must be entered with the clerk at the small exhibits table by noon on the morning of the Meeting, and he will provide exhibitors' cards and stage the exhibits. Exhibitors are not permitted to place on this special table any notice or leaflets, nor may any orders be booked there. Exhibits staged under this regulation may be considered for Certificates of Cultural Commendation.

#### THE LINDLEY LIBRARY.

Fellows are reminded of the conditions under which they may borrow books from the Lindley Library.

The Library is open daily (Sundays and holidays excepted) from 10 A.M. to 5 P.M. (Saturdays, 10 A.M. to 1 P.M.). On the occasion of two-day shows at Westminster it is open until six o'clock on the first day of the Show.

The right of closing the Library at any time for purposes of rearrangement, cleaning, etc., is reserved. It will be closed annually between the second and third fortnightly meetings of the Society in July, in order that the books may be cleaned and the stock inspected. For this purpose it is absolutely necessary that all books borrowed be returned on or before July 16. During the two weeks which follow Fellows will be able to consult books but not to borrow them.

Fellows of the Society have access to the Library at all times when it is open. Gardeners and others, not Fellows or Officers of the Society, must make application to the Secretary for permission to use the Library, and must enter their names and addresses in a book provided for that purpose.

Anyone requiring the loan of a book to be taken from the Library must make written application to the Secretary, and loans will be granted on the following conditions, viz. :

- (a) That the borrower be personally known to one or more of the Officers of the Society, or produce satisfactory references.
- (b) That the borrower sign a receipt for the volumes in a book provided for the purpose before removing them from the premises or, if unable to attend, acknowledge the receipt by post; and undertake to restore the books in good condition and to comply with the regulations.
- (c) That not more than three volumes be lent to one person at one time.
- (d) That borrowers through the post pay the postage both ways.

A certain discretion will be used as to what books shall be lent, but rare books which it would be difficult to replace, periodicals, expensive illustrated works, and works of reference which are likely to be in frequent requisition within the Library itself, may not be removed from the premises. No books may be sent to Fellows resident abroad.

All books borrowed must be returned to the Library in good condition within one calendar month from the date of issue, and if sent by post must be properly protected and packed, but an extension of time may be granted on application.

The Secretary is empowered to demand of the borrowers such books as are detained beyond the prescribed time, and to take such steps as may be necessary to secure the prompt return of the same. The loss of any book or any damage must be made good by the borrower.

Fellows requiring books on loan from the "Outlier" Libraries should make written application either to the Secretary of the Society or to the National Central Library for Students, Malet Street, London, W.C. 1.

#### PUBLICATIONS.

##### *Daffodil Year Book.*

The Daffodil Year Book for 1936 is now available upon application to the Secretary, the price being 5s. in limp cover, and 6s. in stiff cover.

##### *Rock Gardens and Rock Plants.*

(Report of the Alpine Plant Conference.)

"Rock Gardens and Rock Plants," being the Report of the Conference on Alpine Plants held in 1936, has also been published and is available at 6s. a copy. Fellows who have already notified their desire for a copy are being communicated with and their volumes dispatched.

To those who were unable to attend the Conference this Report is highly recommended as giving a great deal of information on rock gardening and the growing of rock plants.



*R.H.S. Diary, 1937.*

The R.H.S. Diary for 1937 will be available towards the end of the month. It now appears for the twenty-sixth year, and it has lost none of its popularity. The price is 2s. 2d. post free, in Pluviusin with back loop and pencil : 3s. 8d. post free in Morocco leather with pencil (not refillable) : or 5s. 2d. post free in refillable Crocodile Case with card and stamp pockets.

The attention of Fellows is called to two recent books published by the Society, containing the latest information regarding the cultivation of their respective subjects and on the newest varieties, which should be especially useful for the approaching planting season.

They are :—

Apples and Pears : Varieties and Cultivation in 1934. Price 7s. 6d. post free.

Cherries and Soft Fruits : Varieties and Cultivation in 1935. Price 6s. post free.

## WISLEY IN OCTOBER.

As we have now come to the second month of autumn flowers are becoming scarce and are replaced by fruits of many kinds, but there will probably yet be some colour on the long herbaceous borders where so many different plants are grown, and behind it as well as in the Wild and Azalea gardens are rows and beds of the late-flowering brilliant blue *Gentiana sino-ornata*, now in its prime.

Of the trials, only the Michaelmas Daisies will be left to tell the tale, unless, as happened in 1935, the autumn frosts are delayed until this month and the Dahlias still continue their display. An interesting collection, however, is that of the newer hybrid Colchicums, to be found beside the large group of *Magnolia grandiflora* near the end of the Peach wall ; they are remarkable for the size of the flowers and have a fine range of colour. In addition to these there are many plantings of species of the family in the Wild garden, in front of the Laboratory wall and on the Rock garden. By the Alpine house is to be seen that late herbaceous plant *Boenninghausenia albiflora*, with a habit and flowers more graceful than its name, and in the neighbouring beds the attractive autumn-flowering species of *Crocus*.

On the Rock garden *Gentians* and *Cyananthus* are likely to be the only plants of note still in bloom, but a search for these will reward the enthusiast in the discovery of several species of each.

In the Wild garden the *Vacciniums*, *Enkianthus*, *Azaleas*, *Oxydendrum*, *Pieris Mariana*, and other deciduous shrubs are changing their leaves to gorgeous red tints, and this, with the berries of the shrubs in Seven Acres, is the dominant note of Wisley in October. Among the latter the chief are the very numerous Barberries, including the well-known Wisley hybrids, all of which this season promise to bear exceptionally heavy crops. In addition to the *Cotoneasters*, both black and red-fruited, *Viburnums*—of which there is a new grouping at the lower end of the Azalea garden—Crab-Apples and wild species of Pears from China, Hawthorns, and the Rose species and hybrids in Howard's Field near the river are particularly worthy of notice.

The Heath garden should still contain several sorts of Heathers in flower, which always help to prolong the colour in the Gardens with forms of *Erica vagans*, *E. stricta*, and the Connemara Heath (*Daboecia polifolia*). An attractive bulb now in bloom near the entrance gates and on the mound near the Award of Merit garden is *Amaryllis Belladonna*, which produces its large umbels of soft pink flowers at this time but the broad leaves separately later on.

Coming to the glasshouses, in the Temperate house several kinds of half-hardy *Salvias* are usually to be found here after the frosts have killed those outside ; the fine royal purple, shrubby but tender *Tibouchina semidecandra* is in bloom now and for a long period ; in the Half-hardy house *Nerines*, and *Leonotis Leonurus*, the 'Lion's Tail,' with striking bright orange whorls of blossom, are likely to be the most noticeable occupants ; though not hardy, this may also be flowering in the borders under the greenhouse walls if frost is not experienced at this date.

The Gardens are open daily from 10 A.M. to sunset except on Sundays, when they are open from 2 P.M. to 6 P.M. (until Sunday, October 25). Adults without Fellows' Tickets are admitted on week-days only on payment of 2s. 6d.

GENERAL MEETINGS.

JULY 28, 1936.

**JOINT BORDER CARNATION COMMITTEE.**—Mr. J. M. BRIDGFORD in the Chair, and eight other members present.

**Awards Recommended :—**

*Preliminary Certificate.*

Border Carnation 'Celia Smith,' shown by Mr. C. Smith, Mansfield Woodhouse, Notts.

*Selected for trial at Wisley.*

Border Carnation 'Celia Smith,' shown by Mr. C. Smith.

AUGUST 5, 1936.

**SCIENTIFIC COMMITTEE.**—Mr. E. A. BOWLES, M.A., F.L.S., F.R.E.S., V.M.H., in the Chair, and five other members present.

*Deutzia Hookeriana.*—Mr. Cotton reported that the *Deutzia* shown by Mr. F. C. Stern at the meeting of July 7 was *D. Hookeriana*.

*Nothopanax laetum.*—Col. Stephenson R. Clarke sent from his garden in the Isle of Wight *Nothopanax laetum*, a native of the Chatham Is. with large digitate evergreen leaves. A Botanical Certificate was unanimously recommended.

*Gladiolus with saccate outgrowths.*—Mr. Mepstead of East Molesey sent some flowers of *Gladiolus* 'The Prince' with curious horn-shaped outgrowths from the middle of the outer-perianth pieces about  $\frac{1}{2}$  inch long.

*Bulbils in Lilium tigrinum.*—Dr. Salisbury reported the occurrence in Lady Falmouth's garden of *Lilium tigrinum* with several bulbils instead of one in the axils of the leaves of the upper part, in one instance a bulbil in the usual place with one on each side of it and another between it and the flower stalk, a very unusual arrangement.

*Hormones.*—Dr. Tincker reported and showed photographs illustrating the development of roots on stems 24 hours after treatment with an appropriate dilution of a hormone in *Buddleia alternifolia* and in *Escallonia* sp.

**FRUIT AND VEGETABLE COMMITTEE.**—Mr. E. A. BUNYARD, F.L.S., in the Chair, and five other members present.

**Exhibits.**

Messrs. Laxton Bros., Bedford : Apple 'Laxton's Early Crimson'; Pear 'Laxton's Early Market'; Plum 'Early Laxton.'

Messrs. T. Rivers, Sawbridgeworth, Herts. : Seedling Peach.

R.H.S. Commercial Fruit Trials, Wisley.

Apples : 'Laxton's Early Crimson' and 'Beauty of Bath.'

Plums : 'Early Laxton,' 'Early Rivers,' 'Delicious,' 'Marjorie's Seedling.'

Blackberry : 'Bedford Giant.'

**FLORAL COMMITTEE A.**—Mr. J. M. BRIDGFORD in the Chair, and eleven other members present.

**Awards Recommended :—**

*Silver-gilt Banksian Medal.*

To Messrs. Unwin, Histon, for *Gladioli*.

*Silver Flora Medal.*

To Messrs. Prichard, Christchurch, for herbaceous plants.

*Silver Banksian Medal.*

To Messrs. Engelmann, Saffron Walden, for Carnations.

To Messrs. Kelway, Langport, for *Gladioli*.

To Messrs. McGredy, Portadown, for Roses.

To Mr. A. Miles, Bickley, for herbaceous plants.

To Messrs. Wakeley, London, for *Gladioli*.

*Flora Medal.*

To Messrs. Allwood, Haywards Heath, for Carnations.

To Messrs. Buckwell, St. Mary Cray, for Roses.

To Messrs. B. R. Cant, Colchester, for Roses.

To Major G. Churcher, Lindfield, for *Gladioli*.

To Messrs. Perry, Enfield, for *Catananches*, *Kniphofias*, etc.

*Banksian Medal.*

To Mr. W. E. B. Archer and Daughter, Sellindge, for Roses.

To Messrs. Bentall, Havering, for Roses.

To Mr. E. B. Le Grice, North Walsham, for Roses.

*Award of Merit.*

To Rose 'Beverley Nichols' (votes unanimous), from The Burbage Nurseries, nr. Hinckley. See p. 441.

*Selected for trial at Wisley.*

Gladioli 'Beryl Nicholas,' 'Colin Unwin,' 'Donald Unwin,' 'Dusky Monarch,' 'Fair Lass,' 'Florrie,' 'Gala Queen,' 'Gracie Fields,' 'Herr Hitler,' 'Jasmine,' 'Jennie,' 'John Pettitt,' 'Marjorie Styles,' 'May,' 'Patricia Unwin,' 'Royalty,' 'Ruby Gem,' 'Tony,' 'True Delight,' 'True Delightful' (to be renamed), 'Unwin's Orange,' 'Yellow Moon,' from Messrs. Unwin, Histon.

Gladioli 'Blue Herald,' 'J. S. Bach,' 'Sonnevance,' from Messrs. Wakeley, London.

Kniphofia 'W. Reeves,' from Messrs. Prichard, Christchurch.

*Scabiosa caucasica* 'Albert Smith,' from A. J. Smith, Esq., Wirral.

The following award was recommended after trial at Wisley :—

*Award of Merit.*

To *Tradescantia* 'Blue Stone,' from Messrs. Prichard, Christchurch. See p. 442.

**Other Exhibits.**

Burbage Nurseries, Hinckley : Roses 'E. J. Manners' and 'Lady Leconfield.'

Messrs. Clark, Dover : herbaceous plants.

Mr. D. Foxwell, Balcombe : *Antirrhinum* 'Foxwell.'

Misses Hopkins, Coulsdon : herbaceous plants.

Messrs. Hurst, London : *Rudbeckia* 'Kelvedon Star Hybrids.'

Mr. C. A. Jardine, Feltham : *Viola* hybrids.

Messrs. Kelway, Langport : *Bocconia cordata* 'Coral Plume' and Gladioli 'Edward VIII,' 'J. C. White.'

Dr. A. H. Williams, Horsham : Rambler Rose 'Lucy's Bush.'

**FLORAL COMMITTEE B.**—Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and twelve other members present.

**Awards Recommended :—***Banksian Medal.*

To Messrs. L. R. Russell, Windlesham, for Nymphaeas, Phloxes, Clematis and shrubs.

To Messrs. Prichard, Christchurch, for alpine plants.

*Award of Merit.*

To *Penstemon cordifolius* as a hardy flowering shrub (votes 7 for, 1 against), from Lady St. Cyres, Walhampton, Lymington. See p. 441.

*Preliminary Commendation.*

To *Leptospermum* sp. Comber No. 2321 as a hardy flowering shrub (votes unanimous), from Lt.-Col. L. C. R. Messel, O.B.E., Nymans, Handcross.

*Selected for trial at Wisley.*

*Leptosyne Stillmannii* f. pl., from Messrs. Hurst, Houndsditch, E.C. 3.

*Clematis Jackmanii* *superba*, from Mr. Ernest Markham, East Grinstead.

**Other Exhibits.**

Col. Stephenson R. Clarke, Ryde, Isle of Wight : *Azara lanceolata*, *Nothopanax laetum* (p. clxx).

Messrs. Hurst, Houndsditch, E.C. 3 : *Verbena bonariensis*.

Mr. Ernest Markham, East Grinstead : *Lonicera similis* var. *Delavayi*, *Magnolia virginiana*.

Lady Martineau, Ascot : *Scolymus maculatus*, *Lilium japonicum*.

Lt.-Col. L. C. R. Messel, O.B.E., Handcross : *Leptospermum* sp., Comber No. 1443.

Messrs. A. Perry, Enfield : *Dianthus Knappii*.

Messrs. Prichard, Christchurch : *Platycodon grandiflorum* *semi-plenum*.

Falconer L. Wallace, Esq., Candacraig, Strathdon : *Erica cinerea*.

Miss Whitnell, 8 Franconia Road, S.W. 4 : *Gomphocarpus fruticosus*.

Dr. A. H. Williams, Horsham : *Olearia cymbifolia*.

Mr. R. Colpoys Wood, West Drayton : shrubs and hardy plants.

Lady St. Cyres, Lymington : *Clematis texensis*, *Hoheria lanceolata*, *Trachospermum jasminoides*.

**ORCHID COMMITTEE.**—Dr. F. CRAVEN MOORE in the Chair, and ten other members present.

**Awards Recommended :—**

*Award of Merit.*

To *Cattleya Loddigesii*, Cannizaro var. (votes 8 for, 2 against), from E. Kenneth Wilson, Esq., "Cannizaro," Wimbledon, S.W. 19. See p. 389.

*Cultural Commendation.*

To Mr. G. A. Bruton, gardener to Mrs. Haddon, Havelock House, Honor Oak Road, S.E. 23, for *Oncidium incurvum* with 11 many-flowered spikes.

**Other Exhibits.**

Messrs. Sanders, St. Albans: *Habenaria Suzannae* and *Cattleya velutina splendens*.

**JOINT DAHLIA COMMITTEE.**—Mr. T. HAY, M.V.O., V.M.H., in the Chair, and eight other members present.

*Selected for trial at Wisley.*

Dahlia 'Gretel' (Garden Cactus), from Messrs. Bath, Wisbech.

Dahlias were also submitted by Mr. A. J. Cobb, Reading.

**JOINT ROCK GARDEN PLANT COMMITTEE.**—Mr. E. A. BOWLES, M.A., F.L.S., F.R.E.S., V.M.H., in the Chair, and six other members present.

**Award Recommended :—**

*Award of Merit.*

To *Gentiana saxosa* as a hardy flowering plant for the rock garden or alpine house (votes unanimous), from Mrs. Gwendolyn Anley, St. George's, Wych Hill Lane, Woking. See p. 440.

**Other Exhibit.**

Lt.-Col. L. C. R. Messel, O.B.E., Nymans, Handcross: *Gentiana* sp. nov. K.W. 10860.

AUGUST 18, 1936.

**FOREMARKE CUP COMPETITION.**

*The Foremarke Cup*, for twenty spikes of named Gladioli in not less than ten varieties, was awarded to Messrs. Wakeley Brothers & Co., Ltd., London.

A lecture was given by Mr. W. E. TH. INGWERSEN on "Plant-hunting in the Caucasus" (see p. 405).

Chairman, Mr. C. T. MUSGRAVE, V.M.H.

**SCIENTIFIC COMMITTEE.**—Mr. E. A. BOWLES, M.A., F.L.S., F.R.E.S., V.M.H., in the Chair, and six other members present.

*Pollination of Plums.*—Mr. C. H. Hooper produced a report which had been printed summarizing knowledge of Plum pollination in orchards in this country, and remarked upon some peculiarities in the fruiting of Plums which he had met with, not all of which seemed likely to be connected with questions of pollination.

*Sawfly on Athyrium.*—Mr. W. Hales showed fronds of *Athyrium Filix-foemina*, which had been growing under glass, attacked by the larvae of a sawfly, which was referred to the British Museum.

*Nemesia malformed.*—Miss Kemble of Wokingham sent a curious specimen of *Nemesia strumosa* in which the flowers were replaced with groups of minute leaves (bracts or sepals?) and the foliage smaller than usual.

*Buddleia Davidi on wall.*—Photographs of *Buddleia Davidi* were sent by Mr. Marks, F.R.H.S., showing a seedling which had rooted into a wall and displaced some of the bricks. It had attained a considerable size.

**FRUIT AND VEGETABLE COMMITTEE.**—Mr. E. A. BUNYARD, F.L.S., in the Chair, and nine other members present.

**Exhibits.**

Messrs. J. C. Allgrove, Slough: Apples and Pears and fruit trees in pots.

Messrs. Laxton, Bedford: Blackberry 'Bedford Giant.'

R. A. Whiting, Esq., "Hilltop," Shire Hall Road, Hawley, nr. Dartford: Seedling Apple.

Messrs. T. Rivers, Sawbridgeworth, Herts: Grapes 'Muscat Hambro,' 'Duke of Buccleuch,' 'Cote House Seedling.'

Mr. F. Streeter, Petworth Park, Petworth: Apple 'Rather Ripe.'

R.H.S. Commercial Fruit Trials, Wisley: Apples 'Arthur Turner,' 'Early McIntosh,' 'Macross,' 'Red Coat Grieve'; Plums 'Black Prince,' 'Bountiful,' Count Althann's Gage, 'Mallard'; Blackberry 'Himalayan Giant.'

**FLORAL COMMITTEE A.**—Mr. J. M. BRIDGEFORD in the Chair, and fourteen other members present.

**Awards Recommended :—**

*Silver-gilt Flora Medal.*

To Messrs. Bath, Wisbech, for Gladioli.

*Silver Banksian Medal.*

To Messrs. Cheal, Crawley, for Dahlias.

To Messrs. Dobbie, Edinburgh, for Scabious.

To Messrs. Engelmann, Saffron Walden, for Carnations.

To Messrs. Kelway, Langport, for Gladioli.

To Mr. E. Ladhams, Elstead, for herbaceous plants and Water Lilies.

To Mr. A. Miles, Bickley, for herbaceous plants.

To Messrs. Wakeley, London, for Gladioli.

*Flora Medal.*

To Messrs. Allwood, Haywards Heath, for Carnations.

To Messrs. Brown & Such, Maidenhead, for Dahlias.

To Messrs. B. R. Cant, Colchester, for Roses.

To Messrs. Perry, Enfield, for Kniphofias, Catananches, Lilies, etc.

To Messrs. Stewart, Ferndown, for Gladioli and Montbretias.

*Banksian Medal.*

To Messrs. Bentall, Havering, for Roses.

To Mrs. W. H. Hall (gr. Mr. May), Lymington, for seedling Gladioli.

To Messrs. Prichard, Christchurch, for herbaceous plants.

To Messrs. Redgrove & Patrick, Seal, for Dahlias and Fuchsias.

To Messrs. Redgrove & Patrick, Seal, for Roses.

*Award of Merit.*

To *Helioopsis scabra patula*, as a plant for the herbaceous border (votes unanimous), from Messrs. Wood, Taplow. See p. 441.

To *Solidago* 'Leraft,' as a plant for the herbaceous border (votes 10 for), from Miss A. Walkden, Sale. See p. 442.

*Selected for trial at Wisley.*

Gladiolus 'Amador' } from A. E. Blake Amos, Esq., Colchester.

Gladiolus 'Golden Flame' }

Gladiolus 'Bit o' Heaven' }

Gladiolus 'Mrs. J. B. Steves' } from Messrs. Bath, Wisbech.

Gladiolus 'Spirit of St. Louis' }

Gladiolus 'Aladdin' }

Gladiolus 'Golden Ground' } from Messrs. Kelway, Langport.

The following awards were recommended after trial at Wisley :—

*Award of Merit.*

To *Antirrhinum* 'La Victoire,' from Messrs. W. H. Simpson, Birmingham.

See p. 439.

To *Catananche caerulea major*, from Messrs. Perry, Enfield. See p. 439.

To Gladiolus 'Aphrodite,' from Messrs. Bath, Wisbech. See p. 440.

To Gladiolus 'C. P. van Tienhoven,' from Messrs. Unwin, Histon. See p. 440.

To Gladiolus 'Debonair,' from Major Churcher, Lindfield. See p. 440.

To Gladiolus 'Gay Hussar,' from Messrs. Velthuys, Hillegom. See p. 440.

To Gladiolus 'Louis d'Or,' from Messrs. Konynenburg & Mark, Noordwyk.

See p. 440.

To Gladiolus 'Polar Ice,' from Messrs. Konynenburg & Mark, Noordwyk.

See p. 440.

To Gladiolus 'Queen Louise,' from Messrs. Dobbie, Edinburgh; Messrs. Morris, Birmingham; Messrs. Pfitzer, Stuttgart. See p. 440.

To Gladiolus 'Salbach's Orchid,' from Mr. Carl Salbach, California. See p. 441.

To Gladiolus 'Sonatine,' from Messrs. Morris, Birmingham. See p. 441.

To Gladiolus 'White Triumphator,' from Messrs. Hurst, London.

To *Gypsophila paniculata* var. 'Rosenchleire,' from Messrs. Perry, Enfield.

See p. 441.

*Highly Commended.*

To Gladiolus 'Alraune,' from Messrs. Konynenburg & Mark, Noordwyk. See

p. 440.

To Gladiolus 'Lady Winsome,' from Mr. R. M. Palmer, British Columbia. See

p. 440.

To *Erigeron glaucum* 'Elstead Pink,' from Mr. E. Ladhams, Elstead. See

p. 439.

**Other Exhibits.**

Mr. W. E. B. Archer and Daughter, Sellindge: Roses.

Messrs. Buckwell, St. Mary Cray: Rose 'Millicent Youngman.'

Mr. W. A. Collier, Redbourn : *Lythrum* 'The Beacon.'  
 Mrs. E. De Neufville, Whitehall : *Delphiniums*.  
 Misses Hopkins, Coulsdon : herbaceous plants.  
 Mr. A. C. B. Ker, Byfleet : *Roses*.  
 Mr. C. T. Kipping, Chelmsford : *Chrysanthemums*.  
 Messrs. Morse, Norwich : *Roses*.

**FLORAL COMMITTEE B.**—Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and seventeen other members present.

**Awards Recommended :—**

*Silver Banksian Medal.*

To Messrs. L. R. Russell, Richmond, for stove and greenhouse plants.

*Flora Medal.*

To Messrs. Prichard, Christchurch, for rock garden plants.

*Award of Merit.*

To *Punica Granatum* var. *nana* (votes unanimous), from Messrs. Sutton, Reading. See p. 441.

*Preliminary Commendation.*

To *Dracocephalum Hemsleyanum*, K.W. 11841, from Mrs. J. S. Courtauld, Burton Park, Petworth, and W. Slade Mitford, Esq., River Cottage, Petworth. See p. 439.

*Selected for trial at Wisley.*

*Clematis intermedia rosea* and *C. Viticella* 'Darkie,' from Mr. Ernest Markham, East Grinstead.

**Other Exhibits.**

Lord Aberconway, Bodnant : *Gaultheria fragrantissima*.

Mr. Ernest Markham, East Grinstead : *Clematis Joviniana praecox superba*.

Lt.-Col. Messel, O.B.E., Handcross : *Leptospermum Rodwayanum*.

A. Corderoy, Eltham : collection of rock garden plants.

Mr. R. Colpoys Wood, West Drayton : collection of shrubs and hardy plants.

**ORCHID COMMITTEE.**—Colonel STEPHENSON R. CLARKE in the Chair, and five other members present.

There was no business before the Committee on this occasion.

**JOINT ROCK GARDEN PLANT COMMITTEE.**—Mr. E. A. BOWLES, M.A., F.L.S., F.R.E.S., V.M.H., in the Chair, and eight other members present.

**Exhibits.**

Lord Aberconway, Bodnant, N. Wales : *Gentiana* sp. (K.W. 10860), *G. Veitchiorum* × *G. hexa-Farveri*.

T. Hay, Esq., Hyde Park, W. 2 : *Gentiana Moorcroftiana*.

**JOINT DAHLIA COMMITTEE.**—Mr. T. HAY, M.V.O., V.M.H., in the Chair, and seven other members present.

*Selected for trial at Wisley.*

From Mr. F. J. Barwise, Burnley : 'Towneley Perfection,' 'Winnie.'

From Messrs. Stredwick, St. Leonards-on-Sea : 'Blanche' (Small Dec.), 'E. Theodore' (Cactus), 'Janet Skeene' (Cactus), 'Moloch' (Garden Cactus), 'Verbena' (Garden Cactus).

From Mr. J. S. Wallis, Histon : 'Bunty.'

Dahlias were also submitted by Messrs. Ballego, Leiden ; Messrs. Brown & Such, Maidenhead ; J. Barton Pearman, Esq., Warnham ; Mrs. C. A. Tisdall, Woodford Green.

SEPTEMBER 1, 1936.

Mr. F. J. HANBURY, F.L.S., V.M.H., in the Chair.

A lecture was given by Mr. W. LOGAN on "Hardy Fern Growing" (see p. 433).

**SCIENTIFIC COMMITTEE.**—Dr. E. J. SALISBURY, F.R.S., in the Chair, and three other members present.

*Cuscuta Gronovii*.—A China Aster covered with a vigorous growth of the N. American Dodder, *Cuscuta Gronovii*, was sent from a garden in Gloucestershire.

*Arisaema Jacquemontii*.—Mr. J. Cromar Watt sent a fruiting specimen of *Arisaema Jacquemontii*, a Himalayan species producing a cylindrical spike about four inches long of bright scarlet berries.

**FRUIT AND VEGETABLE COMMITTEE.**—Mr. E. A. BUNYARD, F.L.S., in the Chair, and eight other members present.

**Exhibits.**

Mr. H. F. Barnett, Westwood House, Tilehurst, Berks: Grape 'Primavis Frontignon'; Figs 'Brown Turkey,' 'Brunswick.'

Mr. W. H. Judd, 84 Derby's Road, Grays, Essex: seedling Apple.

R.H.S. Commercial Fruit Trials, Wisley: Apples 'Epicure,' 'Mrs. Lake-man's Seedling,' and 'Seedling No. 413'; Plums 'Stanleot' and 'Pacific.'

Messrs. T. Rivers, Sawbridgeworth, Herts: Apple 'Marshall's Seedling,' *Rubus Schlechtendahl*.

Mr. F. Streeter, Petworth Park Gardens, Petworth: Apples 'Charles Eyre' and 'Rev. W. Wilks'; Raspberry 'Trinder's Golden Hornet.'

Mr. C. H. Walkden, 8 Cecil Place, Mitcham, Surrey: Apple 'Mitcham Wonder.'

**FLORAL COMMITTEE A.**—Mr. J. M. BRIDGEFORD in the Chair, and ten other members present.

**Awards Recommended:—**

*Silver-gilt Banksian Medal.*

To Messrs. Daniels, Norwich, for Gladioli.

*Silver Flora Medal.*

To Mr. S. Ogg, Swanley, for Dahlias.

To Messrs. Wakeley, London, for Gladioli.

*Silver Banksian Medal.*

To Messrs. Blackmore & Langdon, Bath, for Delphiniums.

To Messrs. Brown & Such, Maidenhead, for Dahlias.

To Messrs. F. Cant, Colchester, for Roses.

To Messrs. Engelmann, Saffron Walden, for Carnations.

To Mr. E. Ladham, Elstead, for herbaceous plants.

To Messrs. McGredy, Portadown, for Roses.

To Mr. A. Perry, Enfield, for Kniphofias and other herbaceous plants.

To Messrs. Redgrove & Patrick, Seal, for Roses.

To Messrs. Spencer, Hockley, for Dahlias.

To Messrs. Vinten, Balcombe, for Chrysanthemums.

*Flora Medal.*

To Messrs. Cheal, Crawley, for Dahlias.

To Mr. H. Hemsley, Crawley, for Dahlias and Sidalceas.

To Mr. E. B. Le Grice, North Walsham, for Roses.

*Banksian Medal.*

To Messrs. Allwood, Haywards Heath, for Carnations and Pinks.

To Messrs. Bentall, Havering, for Roses.

To Messrs. B. R. Cant, Colchester, for Roses.

To Messrs. Gibson, Cranleigh, for Gladioli and Dahlias.

To Messrs. Kelway, Langport, for Gladioli.

To Mr. A. C. B. Ker, Byfleet, for Roses.

To Mr. A. Miles, Bickley, for herbaceous plants.

To Messrs. Prichard, Christchurch, for herbaceous plants.

*Selected for trial at Wisley.*

Gladiolus 'Magna Blanca,' from Messrs. Wakeley, London.

Gladiolus 'Orange Butterfly,' from Messrs. Wakeley, London.

Kniphofia 'Leviathan,' from Messrs. Prichard, Christchurch.

Montbretia 'D. W. Houghton,' 'Gloria,' and 'R. C. H. Jenkinson,' from the Hon. Mrs. E. S. Montagu (gr. Mr. J. E. Fitt), Attleborough.

**Other Exhibits.**

Mr. W. E. B. Archer and Daughter, Sellindge: Roses.

Messrs. Buckwell, St. Mary Cray: Chrysanthemums and Rose 'Millicent Youngman.'

Mr. H. A. Greenslade, Tunbridge Wells: Chrysanthemum 'Margaret Greenslade.'

Misses Hopkins, Coulsdon: herbaceous plants.

Messrs. J. & T. Johnson, Tibshelf: Chrysanthemums.

Mrs. H. A. Milford, Chedworth: *Gladiolus Saundersii* var.

F. L. Taylor, Esq., Shirley, Croydon: Chrysanthemum 'Shirley Orange.'

Messrs. Wheatcroft, Nottingham: Roses.

Mrs. E. T. Whittle, Totteridge: seedling Delphinium.

Mr. R. Colpoys Wood, West Drayton: shrubs, Water Lilies and herbaceous plants.

**FLORAL COMMITTEE B.**—Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and nine other members present.

**Awards Recommended :—**

*Banksian Medal.*

- To Messrs. Cheal, Crawley, for flowering and berried shrubs.
- To Messrs. Gill, Falmouth, for flowering shrubs.
- To Mr. J. Robinson, Eltham, for rock garden plants.
- To Messrs. Russell, Windlesham, for Clematis and other flowering shrubs.

*Award of Merit.*

To *Eucryphia cordifolia* as a hardy flowering shrub (votes unanimous), from Messrs. Gill, Falmouth. See p. 439.

To *Eucryphia* 'Rostrevor' as a hardy flowering shrub (votes 8 for), from Lord Aberconway, Bodnant. See p. 439.

To *Gentiana asclepiadea* as a hardy flowering plant (votes unanimous), from Lady Leconfield, Cockermouth Castle, Cumberland. See p. 439.

To *Pentstemon isophyllus* as a hardy flowering plant (votes 7 for), from Mr. W. Wells, jun., Merstham. See p. 441.

To *Malus* 'Athabasca' as a hardy, ornamental-fruited tree (votes 7 for), from Viscountess Byng of Vimy, Thorpe-le-Soken. See p. 441.

**Other Exhibits.**

Lord Aberconway, Bodnant : *Crinum* sp., *Tricyrtis formosa*.

Viscountess Byng of Vimy, Thorpe-le-Soken : *Malus* 'Lake Erie,' M. 'Okanaghan.'

Messrs. Garway, London, W. 1 : succulents.

Dr. P. L. Giuseppe, Felixstowe : *Gladiolus dracocephalus*.

T. Hay, Esq., Hyde Park, W. 2 : *Nepeta azurea*.

Mrs. H. Milford, Chedworth : *Testudinaria elephantipes*.

Messrs. Treseder, Truro : *Abelia rupestris*, *Hoheria sexstylosa* var. *pendula*.

**ORCHID COMMITTEE.**—Sir JEREMIAH COLMAN, Bt., in the Chair, and eleven other members present.

There was no business before the Committee on this occasion.

**JOINT DAHLIA COMMITTEE.**—Mr. D. B. CRANE in the Chair, and nine other members present.

*Selected for trial at Wisley.*

Large Dec. 'Venus,' from Messrs. Cheal, Crawley.

Min. Paeony 'Empire Glory,' from A. J. Cobb, Esq., Reading.

Dec. 'C.P.,' from J. B. Riding, Chingford.

Paeony 'Dark Eyed Maid'; Med. Dec. 'Peggy Anderson,' from Messrs. Spencer, Hockley.

Inf. Dec. 'Chrysanthemum'; Small Cactus 'Doreen Crane'; Large Dec. 'G. H. Brooker'; Cactus 'Joan Woodroffe'; Large Dec. 'King Edward'; Cactus 'Redstart'; Small Cactus 'Vera Rowse'; Pompon 'Wiluna,' from Messrs. Stredwick, St. Leonards-on-Sea.

Min. Cactus 'Tony,' from Messrs. Treseder, Cardiff.

Pompon 'Seedling No. 73,' from Mr. J. T. West, Brentwood.

Dahlias were also submitted by Messrs. Ballego, Leiden, Holland.

**JOINT ROCK GARDEN PLANT COMMITTEE.**—Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and twelve other members present.

**Awards Recommended :—**

*Award of Merit.*

To *Smilax biflora* as a foliage plant for the alpine house (votes 6 for), from Mrs. Gwendolyn Anley, Woking. See p. 442.

*Cultural Commendation.*

To Frank Barker, Esq., Stevenage, for a large pan of *Gentiana* × *stevenagensis*

**Other Exhibits.**

G. H. Berry, Esq., Enfield : *Gentiana* × *stevenagensis*, *G. Farreri*.

Mrs. I. E. Bray, Halstead : *Gentiana Pneumonanthe*, *Plantago Raoulia*

R. B. Cooke, Esq., Corbridge : *Gentiana hexa-Farreri*.

Mark Fenwick, Esq., Stow-on-the-Wold : *Gentiana Farreri* × *Lawrencei*.

Mr. W. J. Marchant, Wimborne : *Calluna vulgaris* var. *Kuphaldii*.

Mrs. H. Milford, Chedworth : *Gazania* sp., *Sulera* sp., *Apodolirion* sp

Mrs. J. D. North, Norwich : *Gentiana crinita*, *Androsace helvetica*.

E. M. Savory, Esq., Olney : *Woodia ilvensis*, *Asplenium septentrionale*

Dr. Hugh Roger-Smith, Capel : *Chiogenes serpyllifolia*.



# EXTRACTS FROM THE PROCEEDINGS OF THE ROYAL HORTICULTURAL SOCIETY.

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## NOTICES TO FELLOWS.

### SUBSCRIPTIONS.

Fellows and Associates are reminded that anyone elected to the Society between now and the close of the year will enjoy the privileges of Fellowship for the remainder of the year 1936 and will not be required to pay a further subscription until January 1, 1938. Back numbers of the monthly parts of the JOURNAL may be obtained by Fellows at 9d. a number.

### DATE OF CHELSEA SHOW, 1937.

The Calendar for 1937 has now been fixed, and will appear, as usual, in the January number of the JOURNAL, but in view of the Coronation next year and the fact that many Fellows will be desirous of making early arrangements, it is thought that an early announcement of the date of the Chelsea Show is desirable. This Show will be held on Wednesday, Thursday and Friday, May 26, 27 and 28, 1937. The usual special notices will be sent to all Fellows in due course.

### OTHER EVENTS IN 1937.

Annual Meeting. February 23.  
Daffodil Show. April 15 and 16.  
Early Market Produce Show. April 15 and 16.  
Great Autumn Show at Olympia. September 29 and 30 and October 1.  
Fruit and Vegetable Show. October 7 and 8.

### CATALOGUES.

This is the season of the year when new catalogues for the coming season are issued, and Fellows are reminded that in the Lindley Library the Society keeps a valuable collection of catalogues, both past and present. The Keeper of the Library would be grateful if Fellows, when turning over their accumulation of catalogues, would think of the Library and forward any that they do not want to the Secretary. Catalogues of the past are often useful in providing evidence of the introduction of a plant to horticulture, or of the date of the raising of a new variety.

### CALENDAR.

*November 5*, 1-7.30 P.M., and *November 6*, 10 A.M. to 5 P.M.—National Chrysanthemum Society's Show in the New Hall. Fellows' tickets admit free.

*November 10*, 1-5 P.M.—Fortnightly Meeting and Show of flowers in season.

At 3.30 P.M. on *November 10* the second of the Masters Memorial Lectures of the year will be given by Dr. R. N. SALAMAN in the Lecture Room of the New Hall, on "The Potato in its Early Home and its Introduction into Europe."

*November 11* and *12*, 2-4 P.M.—Practical Demonstration at Wisley (weather permitting) on the planting of fruit trees and roses (see special notice, p. clxxviii).

*November 17* and *18*.—Practical Examination for British Floral Art Diploma, Old Hall. The work will be open to inspection by Fellows between 2 and 5 P.M. on *November 18*.

*November 24*, 1-5 P.M.—Fortnightly Meeting and Show of flowers in season in the New Hall.

In the Old Hall the British Carnation Society holds its Show on *November 24* from 1-7.30 P.M., and on *November 25* from 10 A.M. to 5 P.M. Fellows' tickets admit free.

At 3.30 P.M. on *November 24* a Lecture will be given in the Lecture Room of the New Hall by Mr. J. WOOLMAN on "Newer Chrysanthemums."

*December 8*, 1-5 P.M.—Fortnightly Meeting and Show of flowers in season.

*December 9* and *10*, from 2 to 4 P.M.—Practical Demonstration at Wisley (weather permitting) on the pruning of fruit trees (see special notice, below).

#### HALL LETTINGS.

A Sale of Work, in aid of Church Work at home and abroad, will be held in the Old Hall on *November 4* and *5*, particulars of which may be obtained from Mr. A. W. BARTLETT, 6 New Square, Lincoln's Inn, W.C. 2.

On *November 11* and *12* Our Dumb Friends' League will hold their annual Fair in the Old Hall. Inquiries should be addressed to the Secretary, Our Dumb Friends' League, 72 Victoria Street, London, S.W. 1.

On *November 18* and *19* a Bazaar will be held in aid of the Reconstruction Fund of the Hospital for Sick Children, Great Ormond Street, in the New Hall. Particulars may be obtained from the Hon. MARGARET BIGGS, the Hospital for Sick Children, 25 Connaught Square, London, W. 2.

An Exhibition of Applied Arts and Handcrafts, which Fellows will remember has on former occasions been held in the Old Hall, will be held from *November 26* to *December 10*. Particulars may be obtained from Miss N. E. ISAAC, 26 Eastcastle Street, Oxford Circus, London, W. 1.

On *November 27* a Children's Market will be held in the New Hall in aid of the League of Mercy. Particulars may be obtained from Miss EVA MILNES, Secretary, The League of Mercy, 12 Whitehall, London, S.W. 1.

On *December 2*, *3* and *4* a Bird and Aquarium Show will be held in the New Hall. Fellows may remember that such an Exhibition was staged in our Hall last year, and proved a very interesting one. Particulars may be obtained from the Managing Director, The Marshall Press Ltd., Milford Lane, Strand, W.C. 2.

#### BRITISH FLORAL ART DIPLOMA.

The designs made by the candidates for the British Floral Art Diploma Examination will be on exhibition in the Old Hall from 2 to 5 P.M., on Wednesday, *November 18*. Admission is free and it is hoped that Fellows of the Society will take this opportunity of seeing the work done by the candidates.

#### PRACTICAL DEMONSTRATIONS AT WISLEY.

A demonstration on the planting of fruit trees and roses will be given at Wisley on *November 11* and *12* from 2 to 4 P.M., and one on the pruning of fruit trees on *December 9* and *10* at the same hour. Fellows who intend to be present at either of these demonstrations are asked to inform the Director, R.H.S. Gardens, Wisley, Ripley, Surrey, beforehand, mentioning on which day they will attend, in order that adequate arrangements may be made.

#### SMALL EXHIBITS FROM FELLOWS.

Fellows are invited to exhibit interesting or well-grown plants, flowers, fruits or vegetables on the special small exhibits table. Any Fellow who desires to stage an exhibit consisting of not more than three pots, vases, or dishes may do so at any Fortnightly Meeting, although he has not applied for space beforehand. Such exhibits must be entered with the clerk at the small exhibits table by noon on the morning of the Meeting, and he will provide exhibitors' cards and stage the exhibits. Exhibitors are not permitted to place on this special table any notice or leaflets, nor may any orders be booked there. Exhibits staged under this regulation may be considered for Certificates of Cultural Commendation.

#### FRUIT FOR NAMING.

At this time of the year there is always a large amount of Fruit sent to the Committee for naming, and Fellows are reminded of the following instructions which, if followed, will materially assist the Committee in their task of identification, and thus save Fellows from being disappointed owing to the Committee being unable to identify the fruit from the samples sent.

"Send at least three perfect specimens of a variety. Do not send until the fruits are mature, and then choose specimens representative of the particular variety. Avoid sending bruised, diseased or abnormal fruits. Include with each variety a typical shoot with foliage. Number each variety, preferably in Roman figures, by marking the skin with a hard

pencil, and keep a record of the tree from which it is gathered. Labels are often displaced during transit. Wrap each fruit in paper and pack it carefully and securely in wood-wool or similar material. Flimsy cardboard boxes are usually crushed in the post, while scented-soap boxes taint the fruit and obscure its characteristic flavour. Give all the information you can respecting the age of the trees and how they are grown, *e.g.* indoors or out, as cordons, bushes, or standards, etc."

It is a convenience if specimens are sent so as to reach the office by the first post of the morning of a Show day.

#### PICTURES, PLANS, PHOTOGRAPHS, ETC.

With the approach of winter, space will be available at Fortnightly Shows for pictures and photographs of plants, flowers, gardens and plans or models of gardens. Regulations with regard to these exhibits may be had on application to the Secretary. The dates of the Shows when these exhibits are permitted are November 10 and 24, December 8, 1936, and January 12 and 26, February 9 and 23, 1937.

#### HORTICULTURAL SUNDRIES.

The Exhibition of Horticultural Sundries will be allowed at the Fortnightly Shows on December 8, 1936, and January 12 and 26, 1937. If space is available they will be admitted on November 24, 1936.

#### CONFERENCES.

In view of the fact that next year is Coronation Year, there will be no Conference held by the Society, but for 1938 a Conference is being considered, the subject of which will be announced later. In 1939 it has been decided to hold a Conference in co-operation with the Rhododendron Association on Rhododendrons.

#### PUBLICATIONS.

##### *Daffodil Year Book.*

The Daffodil Year Book for 1936 is now available upon application to the Secretary, the price being 5s. in limp cover, and 6s. in stiff cover.

##### *Lily Year Book.*

The Lily Year Book for 1936 will be published in November, and may be obtained upon application to the Secretary, price 5s. in limp cover, 6s. in stiff cover.

##### *Rock Gardens and Rock Plants.*

"Rock Gardens and Rock Plants," being the Report of the Conference on Alpine Plants held in 1936, has also been published and is available at 6s. a copy. This Report is recommended as giving a great deal of information on rock gardening and the growing of rock plants.

##### *R.H.S. Diary, 1937.*

The R.H.S. Diary has now appeared for the twenty-sixth year, and it is pleasing to be able to state that it is the most popular gardeners' diary published. This year's Diary contains, in addition to many notes on different plants, an article on Ferns. The price is 2s. 2d. post free, in Pluviusin with back loop and pencil; 3s. 8d. post free in Morocco leather (not refillable) with pencil; or 5s. 2d. post free in refillable Crocodile Case with card and stamp pockets.

The attention of Fellows is called to two recent books published by the Society, containing the latest information regarding the cultivation of their respective subjects and on the newest varieties, which should be especially useful for the approaching planting season.

They are :—

Apples and Pears : Varieties and Cultivation in 1934. Price 7s. 6d. post free.

Cherries and Soft Fruits : Varieties and Cultivation in 1935. Price 6s. post free.

#### LINDLEY LIBRARY.

Fellows are reminded of the conditions under which they may borrow books from the Lindley Library.

The Library is open daily (Sundays and holidays excepted) from 10 A.M.

to 5 P.M. (Saturdays 10 A.M. to 1 P.M.). On Show Days the Library will remain open until the close of the Show, except on two-day Shows, when it will be open until 6 o'clock on the first day of the Show.

The right of closing the Library at any time for purposes of rearrangement, cleaning, etc., is reserved. It will be closed annually for two weeks, usually between the first and second fortnightly meetings of the Society in July, in order that the books may be cleaned and the stock inspected. During this period Fellows will be able to consult books but not to borrow them.

The Fellows of the Society have access to the Library at all times when it is open.

Gardeners and others, not Fellows or Officers of the Society, must make application to the Secretary for permission to use the Library, and must enter their names and addresses in a book provided for that purpose.

Anyone requiring the loan of a book to be taken from the Library must make written application to the Secretary, and loans will be granted on the following conditions, viz. :—

- (a) That the borrower be personally known to one or more of the Officers of the Society, or produce satisfactory references.
- (b) That the borrower sign a receipt for the volumes in a book provided for the purpose, before removing them from the premises, or if unable to attend, to acknowledge the receipt on a postcard; and undertake to restore the books in good condition and to comply with the regulations.
- (c) That not more than three volumes be lent to one person at one time.
- (d) That borrowers through the post pay the postage both ways.

A certain discretion will be used as to what books shall be lent, but rare books which it would be difficult to replace, periodicals, expensive illustrated works and works of reference which are likely to be in frequent requisition within the Library itself may not be removed from the premises.

No books may be sent to Fellows resident abroad.

All books borrowed must be returned to the Library in good condition within one calendar month from the date of issue, and if sent by post must be properly protected and packed, but an extension of time may be granted on application.

The Secretary is empowered to demand of the borrowers such books as are detained beyond the prescribed time, and to take such steps as may be necessary to secure the prompt return of the same.

The loss of any book or any damage must be made good by the borrower.

Fellows requiring books on loan from the "Outlier" Libraries should make written application either to the Secretary of the Society or to the National Central Library for Students, Malet Street, London, W.C. 1.

The Trustees reserve the right of repealing or altering any of these regulations from time to time as may be required.

#### WISLEY IN NOVEMBER.

In the earlier part of this month the visitor should see the collection of autumn-flowering *Crocus* species in the beds near the Alpine House, which with others along the foot of the Peach Wall will continue to bloom in succession for several weeks.

The Fruit Room at the eastern end of King's Avenue (near the Michaelmas Daisies) now contains a selection of the Apples and Pears from the orchard and Commercial Fruit Trials, and should be inspected by those who are interested, or who wish to compare their own fruits.

A feature of the Gardens this month is the autumn colour of the foliage, especially noticeable in the Wild Garden amongst such shrubs as the *Vacciniums*, *Liquidambar styraciflua*, *Pieris Mariana*, *Oxyendrum arborescens*, and *Enkianthus*, and also the many forms and hues of the berries of the shrubs in Seven Acres, Howard's Field, and elsewhere. Chief of these are the *Berberis*, *Cotoneasters*, *Crab-Apples*, and perhaps *Pyracanthas* and *Viburnums* if the birds are not too much attracted by them. As the leaves fall the coloured stems of Dogwood, certain Willows and *Berberis* species become apparent and brighten the landscape, while the earliest flowers of *Virburnum fragrans* may be expected this month, although variable in their appearance from year to year.

Within the greenhouses there should be a greater variety of bloom than outside. The *Acacias* begin their long flowering season now, and in the Temperate House also are the *Salvia* species which come late in the year, such as *S. involucreata* and *S. leucantha*, *Epacris*, the royal purple *Tibouchina*, and other plants of worth. The second house will contain *Chrysanthemums*, while in the first, or Half-hardy House, *Abutilons* and *Nerines* will continue the display.

## GENERAL MEETINGS.

SEPTEMBER 8, 1936.

**JOINT DAHLIA COMMITTEE** (National Dahlia Society's Show).—Mr. D. B. CRANE in the Chair, and eight other members present.

Over ninety new seedling varieties of Dahlia were before the Committee on this occasion.

*Selected for trial at Wisley.*

From Messrs. J. G. Ballego, Leiden, Holland : 'Leiden's Miniature,' 'Leiden's Orange.'

From Messrs. D. Brudegom, Baarn, Holland : 'Mascotte,' 'Red Favourite.'

From Messrs. H. Carlée, Haarlem, Holland : 'Fine Limburg,' 'G. v. Sons-beek,' 'Helly Boudewyn,' 'Joan.'

From Mr. E. J. Coates, Shrivenham : 'Lady Kendall Butler' (Semi Cactus).

From G. P. Roddam, Esq., Tunbridge Wells : 'Coronation' (to be renamed), 'Newtown.'

From Messrs. Ruyter, Oegstgeest, Holland : 'Modern Times.'

From Messrs. W. Treseder, Cardiff : 'Newport Gem.'

From E. D. Tyler, Esq., Leicester : 'Seedling No. 2' (to be named).

From Messrs. C. Webb, Kendal : 'Mrs. S. J. Webb.'

From Mr. J. T. West, Brentwood : 'Peaceful' (Min. Cactus).

From Messrs. Westwell, Leigh : 'White Baby Royal.'

From Mr. S. E. White, Uxbridge : 'Norah Dennis.'

From Mr. E. Wild, Shotton, Chester : 'Margaret Woolven.'

Dahlias were also submitted by the following : Mr. J. F. Barwise, Burnley ; T. G. Bradbury, Esq., Herne Hill ; Messrs. Brown & Such, Maidenhead ; Mr. J. Davidson, Cleator Moor ; Messrs. Dekker, N. Niedorp, Holland ; Rev. J. F. Douglas, Shackleford ; Mr. G. Elsom, Spalding ; Lady Gladstone of Hawarden ; A. Griffiths, Esq., O.B.E., Herne Hill ; Mr. M. L. Hudson, Wroxham ; Messrs. C. Kroon, Baarn, Holland ; Liphook Flower and Seed Farm, Liphook ; Messrs. K. Maarse, Aalsmeer, Holland ; Messrs. Owens, Bath ; Messrs. Stredwick, St. Leonards-on-Sea ; Messrs. W. Topsvoort, Aalsmeer, Holland ; Mr. J. S. Wallis, Histon.

SEPTEMBER 15, 1936.

Mr. C. H. CURTIS, F.L.S., V.M.H., in the Chair.

A lecture was given by Mr. H. G. HILLIER on "Lilacs" (see p. 449).

**SCIENTIFIC COMMITTEE.**—Mr. A. D. COTTON, O.B.E., F.L.S., in the Chair, and ten other members present.

*Rose hybrids.*—Mr. Marsden-Jones drew attention to the group of fruits of hybrid Roses shown from the R.H.S. Gardens at Wisley and proposed, and it was agreed, that a Certificate of Appreciation should be recommended for award to Dr. C. C. Hurst for his work in raising and investigating these hybrids.

*Gentiana Pneumonanthe*, etc.—Mr. Marsden-Jones showed a specimen of the British form of *Gentiana Pneumonanthe* nearly one foot in height, and of *Paeonia corallina* in fruit.

*Centaurea hybrids.*—He also showed a hybrid between a white form of *Centaurea scabiosa* and *C. collina*; the hybrids had purple colour developed on the flower to a greater or less extent and were more or less lemon.

*Metallic coloration on foliage.*—Mr. Preston showed leaves of plants gathered from beneath a greenhouse stage whereon *Selaginella Willdenowii* was growing which exhibited a distinct metallic sheen, whereas other leaves from similar plants not so situated failed to show it. He is making further investigations on the matter.

*Nigella hispanica* with dialysed ovaries.—Mr. Hales showed fruits of *Nigella hispanica* with the carpels separated to a greater or less degree instead of being syncarpous as is normal.

*Senecio cervilingua*.—Mrs. Tracey sent flowers and shoots of the South American *Senecio cervilingua*, an uncommon plant with handsome purplish flowers, growing about 4 feet high.

**FRUIT AND VEGETABLE COMMITTEE.**—Mr. E. A. BUNYARD, F.L.S., in the Chair, and nine other members present.

**Exhibits.**

Messrs. Bunyard, Maidstone : collection of Apples and Crabs.

Messrs. Cheal, Crawley : collection of Apples, Pears, and Damsons.

Mr. A. C. B. Ker, West Byfleet Nursery, Near Weybridge : collection of Apples.

East Malling Research Station, East Malling : collection of Fruits of Apple Rootstocks.

Mr. A. E. Green, 1 Station Road, Ropley, Hants : Pea ' Gladstone.'

Mr. E. C. Philpott, " Cosy Nook," South Road, River, Dover : Apple ' Co-operator.'

R.H.S. Commercial Fruit Trials, Wisley : Plums ' Delicious,' ' Marjorie's Seedling'; Apples ' St. Everard,' ' Taunton Cross.'

Mr. F. Streeter, Petworth Park, Petworth : Apples ' Nanny,' ' Peacemaker,' ' Guelph.'

Messrs. T. Rivers, Sawbridgeworth, Herts : seedling Peach.

**FLORAL COMMITTEE A.**—Mr. D. INGAMELLS in the Chair, and thirteen other members present.

**Awards Recommended :—**

*Silver-gilt Flora Medal.*

To Messrs. Dobbie, Edinburgh, for Dahlias and Gladioli.

*Silver-gilt Banksian Medal.*

To Messrs Daniels, Norwich, for Gladioli.

To Messrs. Dickson, Newtownards, for Roses.

To Messrs. Luxford, Sawbridgeworth, for Chrysanthemums.

To Mr. S. Ogg, Swanley, for Dahlias.

To Mr. J. B. Riding, Chingford, for Dahlias.

To Mr. J. T. West, Brentwood, for Dahlias.

*Silver Flora Medal.*

To Ashington Nurseries, Ltd., Ashington, for Chrysanthemums and Carnations.

To Messrs. Bath, Wisbech, for Gladioli.

To Mr. F. J. Bell, Whitley Bay, for Violas.

To Messrs. Cheal, Crawley, for Dahlias.

To Messrs. Dicksons, Edinburgh, for Roses.

To Messrs. Lawrence, Chatham, for Chrysanthemums.

To Messrs. McGredy, Portadown, for Roses.

To Messrs. Carter Page, London, for Dahlias.

To Lady Yule (gr. Mr. H. Rideout), St. Albans, for Gesnerias and Crotons.

*Silver Banksian Medal.*

To Messrs. Barr, London, for Montbretias.

To Messrs. Kelway, Langport, for Gladioli.

To Mr. E. Ladhams, Elstead, for herbaceous plants.

To Messrs. Vinten, Balcombe, for Chrysanthemums.

To Messrs. Wakeley, London, for Gladioli.

To Messrs. Wood, Taplow, for Michaelmas Daisies.

To Mr. H. Woolman, Birmingham, for Begonias.

*Flora Medal.*

To Messrs. Allwood, Haywards Heath, for Carnations.

To Messrs. Blackmore and Langdon, Bath, for Begonias.

To Mr. A. Perry, Enfield, for herbaceous plants.

To Messrs. Spencer, Hockley, for Dahlias.

*Banksian Medal.*

To Messrs. Bentall, Havering, for Roses.

To Messrs. Brown & Such, Maidenhead, for Dahlias.

To Mr. J. F. Cumming, Wisbech, for Scabious and Pyrethrums.

To Messrs. Engelmann, Saffron Walden, for Carnations.

To Messrs. Gibson (Cranleigh), Ltd., for Dahlias.

To Mr. A. Miles, Bickley, for herbaceous plants.

To Messrs. Prichard, Christchurch, for herbaceous plants.

*Award of Merit.*

To Chrysanthemum ' Elsie Hilder ' for market (sprays) and border (votes unanimous), from Messrs. Buckwell, St. Mary Cray. See p. 483.

**Other Exhibits.**

Messrs. B. Cant, Colchester : Roses.  
 Messrs. Clark, Dover : herbaceous plants.  
 Mr. H. Cobbett, Mayford : Chrysanthemums.  
 Dartington Hall, Ltd., Totnes : Dwarf Michaelmas Daisies.  
 Mr. L. S. Harbutt, Wickhambrook : Dahlias and herbaceous plants.  
 J. Holbrook, Esq., Chingford : seedling Gladioli.  
 Misses Hopkins, Coulsdon : herbaceous plants.  
 C. J. Howlett, Esq., Earley : Fuchsia 'Queen Mary.'  
 Mr. H. Lowe, Tibshelf : Chrysanthemums.  
 Mr. E. Riley, Alfreton : Chrysanthemums.  
 Messrs. Russell, Ingatstone : Chrysanthemum 'September Beauty.'  
 Messrs. Wheatcroft, Nottingham : Roses.  
 Mr. H. Woolman, Birmingham : Chrysanthemum 'Edith Carter.'

**FLORAL COMMITTEE B.**—Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and fourteen other members present.

**Awards Recommended :—***Silver-gilt Banksian Medal.*

To the Knap Hill Nursery, Woking, for a group of *Lilium myriophyllum superbum* with Rhododendrons and other shrubs.

*Silver Banksian Medal.*

To Messrs. J. Cheal, Crawley, for flowering and foliage shrubs.

*Flora Medal.*

To Messrs. Hillier, Winchester, for flowering and foliage shrubs.

To Messrs. Russell, Windlesham, for Clematis and other shrubs.

*Banksian Medal.*

To Hocker Edge Gardens, Cranbrook, for Lilies and other bulbous plants.

To Mr. L. Lawrence, Taplow, for succulents.

To Messrs. Neale, Worthing, for succulents.

*Award of Merit.*

To *Acidanthera bicolor* var. *Murielae* as a tender flowering plant (votes 8 for), from Amos Perry, Enfield. See p. 483.

To *Clematis Rehderiana* as a hardy flowering climber (votes unanimous), from Mr. Ernest Markham, East Grinstead. See p. 483.

To *Crataegus Arnoldiana* as a hardy ornamental-fruited tree (votes unanimous), from the Director, R.H.S. Gardens, Wisley. See p. 483.

To *Phygelius aequalis* as a hardy flowering plant (votes 8 for, 2 against), from the Viscountess Byng of Vimy, Thorpe-le-Soken. See p. 484.

To *Polygonum Reynoutria* as a hardy flowering plant (votes unanimous), from Mr. Amos Perry, Enfield. See p. 484.

To *Pieris ovalifolia* var. *lanceolata* as a hardy flowering shrub (votes unanimous), from Lionel de Rothschild, Esq., Exbury. See p. 484. This award was recommended on July 21, 1936, subject to naming, and is now confirmed.

**Other Exhibits.**

Mr. A. Corderoy, Eltham : rock garden plants.

Mrs. Robert Lukin, Burghfield Common : *Salvia involucrata* var. *Bethellii*.

Mr. E. Markham, East Grinstead : *Prunus Laurocerasus* var. *magnoliaefolia*, *Clematis campaniflora*, *Gypsophila acutifolia*, *Boenninghausenia albiflora*.

Marsden Nurseries, Ashted : hardy plants.

Mrs. R. L. Newman, Dartmouth : *Lavatera maritima*, *Desmodium* sp., *Elsholtzia Stauntonii*.

Mrs. Tracey, Wimborne : *Senecio cervilingua*. See p. clxxxi.

The Director, R.H.S. Gardens, Wisley : group of fruited sprays of Rose hybrids raised by Dr. C. C. Hurst.

Mr. R. Colpoys Wood, West Drayton : flowering shrubs.

**ORCHID COMMITTEE.**—Sir JEREMIAH COLMAN, Bt., in the Chair, and eleven other members present.

**Exhibits.**

Messrs. Charlesworth, Haywards Heath : a group.

Messrs. Stuart Low, Jarvis Brook : a group.

**JOINT DAHLIA COMMITTEE.**—Mr. D. B. CRANE in the Chair, and six other members present.

*Selected for trial at Wisley.*

From Messrs. Stredwick, St. Leonards-on-Sea: 'Chas. A. Gillatt' (Large Dec.), 'Dr. Thorne' (Semi-Cactus), 'F. Wimshurst' (Large Dec.), 'Iris' (Pompon), 'Redcross' (Cactus), 'Rupert Hammond' (Large Dec.), 'Waxwing' (Small Dec.).

From Messrs. Torrence & Hopkins, Busby: 'Jeanette' (Dec.).

From Mr. J. T. West, Brentwood: "Intensity" (Med. Dec.).

Dahlias were also submitted by S. C. Bailey, Esq., Hinckley; Messrs. Cheal, Crawley; Mr. R. M. Grier, Barrhead; Mr. J. B. Riding, Chingford; Messrs. Spencer, Hockley.

**JOINT ROCK GARDEN PLANT COMMITTEE.**—Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and seven other members present.

**Exhibits.**

H. Clifford Crook, Esq., Bromley: *Campanula velutina*.

Dr. F. W. Crossman, Hambrook: *Gaultheria cuneata*.

SEPTEMBER 29, 1936.

Dr. A. B. RENDLE, M.A., D.Sc., F.R.S., F.L.S., V.M.H., in the Chair.

A lecture was given by Mr. G. C. JOHNSON on "Horticultural Education in the Counties" (see p. 465).

**SCIENTIFIC COMMITTEE.**—Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and nine other members present.

*Acer villosum*.—Mr. Jackson showed a specimen of the very uncommon large-leaved Himalayan *Acer villosum* which had been planted by Mr. Chambers at Grayswood where it still flourishes.

*Heaths*.—Mr. Marsden-Jones showed *Erica ciliaris* and its white variety and *Erica cinerea alba*.

*Centaurea forms*.—Mr. Marsden-Jones also showed flower heads of forms belonging to the aggregate *Centaurea nigra-Jacea-nemorialis*. They included the eradiate form and its cream counterpart, the radiate and its cream counterpart, the semi-radiate, the longiflora and breviflora forms and their radiate counterparts. The breviflora form exists as female only.

Mr. Marsden-Jones said that *C. Scabiosa* does not in his experience hybridize with members of this group.

*Epilobium hirsutum* × *E. montanum*.—Mr. Marsden-Jones also showed plants of the curious dwarf contorted form with small leaves which resulted on crossing *Epilobium hirsutum* and *E. montanum*. The plants produced flowers as large as those of *E. hirsutum* but were sterile.

*Effect of hormones on rooting*.—Dr. Tincker showed specimens to illustrate accelerated root formation by using a very weak solution (one part in ten thousand of water) of  $\alpha$ -naphthaleneacetic acid, and  $\beta$ -indolylacetic acid, or heteroauxin before insertion of cuttings into propagating frame containing sand. Control cuttings were placed in water for comparable periods. Specimens shown included:

- (1) *Diervilla rosea*, treated July 7, rooted August 10. Controls no roots, August 17.
- (2) *Ilex Aquifolium*, treated July 7, rooted July 30. Controls no roots, August 8.
- (3) *Viburnum Carlesii*, treated July 30, basal swellings August 10, rooted August 20. Controls no roots, August 27.
- (4) *Viburnum rhytidophyllum*, bud cuttings treated August 12, rooted September 9. No roots on controls, September 29.

*Curious Physalis*.—The curious dialysed form of *Physalis Alkekengii*, which was before the Committee last year, was exhibited in a fresh state by Mr. Amos Perry.

*Fasciated Antirrhinum*.—Mr. A. J. Balfour of Langley sent a fasciated Antirrhinum plant in which the branches were flattened to a gradually expanded growth about 3 inches wide bearing numerous short shoots in which the bracts were repeated again and again but no flowers were produced.

*Cydonia japonica monstrosus*.—Mr. Cotton showed specimens of abnormal shoots produced by an old plant of *Cydonia japonica*. The abnormal growths arose on the long sucker-like shoots (which frequently spring from near the base



of this plant), and consist of much-branched structures somewhat resembling "witches' brooms." The broom-like growths developed laterally and irregularly on the upper part of the sucker-like shoots, and are pale in colour, the individual branches being short but unusually thick and puffy. Leaf-production on the long-branched sucker-like shoots is scarce, and on the broom-like growths themselves it is entirely suppressed. Sections of the thick, puffy shoots showed that the increase of bulk was due to the extra development of secondary xylem and an extra amount of cortex. A remarkable feature of the "brooms" lies in the fact that certain branches grow out into normal shoots with leaves, and these again may in turn produce "brooms." It was suggested that the abnormal growths might be due to a gall-forming fungus or insect which was able to infect the suckers and not the normal shoots of the tree, but no trace of fungus mycelium or insect attack was found. Owing to the complete absence of leaves on the greater part of the branched sucker-like shoots and on the "brooms," the entire complex must to a large extent be living at the expense of the main plant.

**FRUIT AND VEGETABLE COMMITTEE.**—Mr. E. A. BUNYARD, F.L.S., in the Chair, and nine other members present.

**Awards Recommended :—**

*Award of Merit.*

Pear 'Satisfaction,' for dessert purposes (votes unanimous), from Messrs. Laxton, Bedford.

**Other Exhibits.**

Messrs. Laxton, Bedford : Collection of new Apples, Pears, and Plums ; and Pears 'Laxton's Harvester,' 'Laxton's Prolific,' 'Laxton's Defiance'; Apple 'Laxton's Aristocrat,' and Plum 'Laxton's Cropper.'

Messrs. A. A. Buckwell, Lane Nurseries, St. Mary's Cray, Kent : Gage 'Orpington Prolific.'

Messrs. Seabrook, Boreham, Chelmsford : Apples 'Amber,' 'Crystal,' 'Jewel,' 'Pearl,' and 'Topaz.'

Mr. C. E. Harrison, 26 Logan Street, Langley Park, co. Durham : Apple 'Harrison's Pear Pippin.'

Miss A. Birkett, River House, Elstead : Seedling Apple.

Mr. C. H. Walkden, 8 Cecil Place, Mitcham : Apple, 'Mitcham Wonder.'

Mr. W. Girvan, Heath Road, Ditton, Widnes : Apple 'Girvan Seedling.'

R.H.S. Commercial Fruit Trials, Wisley : Pears 'Autumn Nelis' and 'Doyenné Bussoch.'

Mr. F. Streeter, Petworth Park Gardens, Petworth : Apples 'Duck's Bill,' Cornish Gilliflower,' 'Ellison's Orange,' and 'Herring's Pippin.'

**FLORAL COMMITTEE A.**—Mr. J. M. BRIDGEFORD in the Chair, and seventeen other members present.

**Awards Recommended :—**

*Gold Medal.*

To Messrs. Bees, Ltd., Chester, for herbaceous plants.

*Silver-gilt Flora Medal.*

To Messrs. Blackmore & Langdon, Bath, for Begonias.

*Silver-gilt Banksian Medal.*

To Messrs. Luxford, Sawbridgeworth, for Chrysanthemums.

To Mr. S. Ogg, Swanley, for Dahlias.

To Messrs. Carter Page, London, for Dahlias.

To Messrs. Wood, Taplow, for Michaelmas Daisies.

*Silver Flora Medal.*

To Mr. E. Ballard, Colwall, for Michaelmas Daisies.

To Messrs. Brown & Such, Maidenhead, for Dahlias.

To Messrs. Cheal, Crawley, for Dahlias.

To Messrs. Jarman, Chard, for Dahlias.

To Messrs. McGredy, Portadown, for Roses.

To Mr. J. B. Riding, Chingford, for Dahlias.

To Messrs. Waterer, Sons & Crisp, Twyford, for herbaceous plants.

To Mr. J. T. West, Brentwood, for Dahlias.

*Silver Banksian Medal.*

To Messrs. Allwood, Haywards Heath, for Carnations.

To Ashington Nurseries, Ltd., Ashington, for Carnations and Chrysanthemums.

To Messrs. Dickson, Newtownards, for Roses.

To Mr. E. Ladhams, Elstead, for herbaceous plants.

*Flora Medal.*

- To Messrs. Barr, Taplow, for Michaelmas Daisies.
- To Mr. F. J. Bell, Whitley Bay, for Violas.
- To Messrs. B. R. Cant, Colchester, for Roses.
- To Messrs. Hewitt, Stratford-on-Avon, for Dahlias.
- To Messrs. Kelway, Langport, for Gladioli.
- To Mr. A. Miles, Bickley, for Michaelmas Daisies.
- To Messrs. Vinton, Balcombe, for Chrysanthemums.

*Banksian Medal.*

- To Mr. W. E. B. Archer & Daughter, Sellindge, for Roses.
- To Messrs. Daniels, Norwich, for Gladioli and Michaelmas Daisies.
- To Messrs. Engelmann, Saffron Walden, for Carnations.
- To Messrs. Gibson (Cranleigh), Ltd., Cranleigh, for Dahlias and Michaelmas

Daisies.

- To Mr. T. Selwyn Hughes, Great Missenden, for Chrysanthemums.
- To Messrs. Prichard, Christchurch, for herbaceous plants.
- To Messrs. Prior, Colchester, for Roses.
- To Messrs. Redgrove & Patrick, Sevenoaks, for herbaceous plants.
- To Messrs. Spencer, Hockley, for Dahlias.

*Selected for trial at Wisley.*

- Aster 'Beechwood Beacon' from Messrs. Wood, Taplow.
- Aster 'Lily Hooker' from Messrs. Buckwell, St. Mary Cray.
- Aster 'Ruth Bide' from Messrs. Bide, Farnham.
- Montbretia 'Sprowston Glory' from C. R. A. Hammond, Esq. (gr. Mr. A. J. Lovey), Norwich.

**Other Exhibits.**

- Messrs. Barr, Taplow : Rudbeckia hybrida 'Delicia,' Aster 'Olga Keith.'
- Messrs. Bentall, Havering : Roses.
- Messrs. Buckwell, St. Mary Cray : Chrysanthemums.
- Messrs. Clark, Dover : herbaceous plants.
- Mr. A. Foxwell, Balcombe : Antirrhinum 'Foxwell.'
- Misses Hopkins, Coulsdon : herbaceous plants.
- Mr. E. Ladhams, Elstead : *Salvia splendens* 'Elstead Crimson.'
- Messrs. Letts, Hadleigh : Dahlias.
- Messrs. S. Low, Enfield : Carnations.
- Mr. E. Markham, East Grinstead : *Anemone japonica* 'Rose of Gravetye.'
- Messrs. Morse, Norwich : Roses.
- Messrs. Portlock, Preston : Chrysanthemum 'C. Portlock.'
- Mr. F. Rich, Worcester : Michaelmas Daisies.
- Messrs. Treseder, Cardiff : Dahlias.
- Messrs. Wheatcroft, Nottingham : Roses.

**FLORAL COMMITTEE B.**—Mr. C. T. MUSGRAVE, in the Chair, and seventeen other members present.

**Awards Recommended :—**

*Silver Lindley Medal.*

- To Sir Jeremiah Colman, Bt., Gatton Park, for Nepenthes.

*Silver Banksian Medal.*

- To Messrs. Cheal, Crawley, for berried and foliage shrubs.
- To Messrs. Wallace, Tunbridge Wells, for berried and foliage shrubs.

*Flora Medal.*

- To Mr. W. A. Constable, Southborough, for Lilies.
- To Messrs. Hillier, Winchester, for shrubs and herbaceous plants.
- To Mr. Amos Perry, Enfield, for Physalis and other hardy plants.
- To Messrs. Russell, Windlesham, for Clematis and other shrubs.
- To Messrs. Stewart, Ferndown, for shrubs and herbaceous plants.

*Banksian Medal.*

- To Hocker Edge Gardens, Cranbrook : for Cyclamens and Gentians.
- To Mr. J. J. Klinkert, Richmond, for clipped Box Trees.
- To Messrs. Maxwell & Beale, Broadstone, for hardy Heaths.
- To Messrs. Prichard, Christchurch, for hardy plants.

*First Class Certificate.*

To *Gentiana* 'Devonhall' as a flowering plant for the rock garden and alpine house (votes 10 for), from Andrew Harley, Esq., Blinkbonny, Kirkcaldy. See p. 483. This award was recommended, subject to the plant receiving a name, on September 1, 1936, and is now confirmed.

*Award of Merit.*

To *Beloperone guttata* as a flowering plant for the cool greenhouse (votes unanimous), from the Director, Royal Botanic Gardens, Kew. See p. 483.

To *Rosa holodonta* as a hardy ornamental fruiting shrub (votes unanimous), from Lady Beatrix Stanley, Market Harborough, and the Rt. Hon. Earl of Stair, Stranraer. See p. 484.

To *Viburnum betulifolium* as a hardy ornamental fruiting shrub (votes unanimous), from G. H. Johnstone, Esq., Grampound Road, Cornwall. See p. 484.

*Selected for trial at Wisley.*

Clematis 'Marie Boisselot,' sent by Mr. Ernest Markham, East Grinstead.

**Other Exhibits.**

T. Hay, Esq., Hyde Park, W. 2 : *Malva umbellata*, *Sauraja subspinosa*.

G. H. Johnstone, Esq., Grampound Road : *Schima khasiana*.

The Director, R.B.G., Kew : *Polygonum* sp.

Mr. E. Markham, East Grinstead : Clematis 'Oiseau Bleu,' *Cornus Mas* in fruit, *Gyneryum Rendalleri*.

Messrs. Neale, Worthing : succulents.

Mr. J. Robinson, Eltham : rock garden plants.

Lady Alice Shaw Stewart, Inverkip : *Eupatorium verticillatum*.

Mr. G. G. Whitelegg, Chislehurst : *Gentiana sino-ornata*.

The Director, R.H.S. Gardens, Wisley : *Cotoneaster hupehensis*.

Mr. R. Colpoys Wood, West Drayton : hardy plants.

**ORCHID COMMITTEE.**—F. J. HANBURY, Esq., in the Chair, and eleven other members present.

**Awards Recommended :—***Award of Merit.*

To *Zygopetalum* × *Blackii* var. 'Negus' (*crinitum* × *Perrenoudii*) (votes 9 for), from Messrs. Charlesworth, Haywards Heath. See p. 485.

To *Laeliocattleya* × 'Gatton Glory' (*C.* × 'Mimosa' × *L.-c.* × 'Canberra') (votes 10 for), from Sir Jeremiah Colman, Bt., Gatton Park, Surrey. See p. 484.

To *Laeliocattleya* × 'Elissa' (*C.* × 'Dinah' × *L.-c.* × 'Ishtar') (votes 7 for), from Messrs. H. G. Alexander, Tetbury. See p. 484.

**Other Exhibits.**

Mr. Chester Gayton, Farm Lane, Purley : *Sophrolaeliocattleya* × 'Trizac.'

Sir Jeremiah Colman, Bt., Gatton Park, Surrey : *Lycaste* × 'Olivia' (*locusta* × *xytriophora*).

Messrs. Charlesworth, Haywards Heath : a group.

Messrs. Sanders, St. Albans : a group.

**JOINT DAHLIA COMMITTEE.**—Mr. T. HAY, V.M.H., M.V.O., in the Chair, and eight other members present.

*Selected for trial at Wisley.*

From Messrs. Brown & Such, Maidenhead : 'Lilac Lambourne' (Dec.).

From Messrs. Burrell, Cambridge : 'George Preston' (Small Dec.), 'Margaret Scott' (Charm), 'Mrs. F. G. Preston' (Small Dec.).

From Mr. J. B. Riding, Chingford : 'Charles Mastick' (Large Dec.).

From Messrs. Stredwick, St. Leonards-on-Sea : 'Cherry Agar' (Dec.), 'Miss Kingsley' (Dec.).

From Messrs. Treseder, Cardiff : 'Barry Gem,' 'Basuto.'

From Mr. J. T. West, Brentwood : 'Lady Huntingfield' (Cactus), 'Mabel Cook.'

Dahlias were also submitted by the following : Miss E. M. Brierly, Penrith ; Messrs. Ballego, Leiden, Holland ; Messrs. Cheal, Crawley ; R. M. Grier, Esq., Barrhead ; Messrs. Spencer, Hockley ; Mr. W. E. Wright, Chisledon.

SEPTEMBER 30, 1936.

**JOINT PERPETUAL FLOWERING CARNATION COMMITTEE**, at Mr. T. Stevenson's Nursery, Hillingdon.—Mr. J. M. BRIDGEFORD in the Chair, and seven other members present.

**Exhibit.**

Perpetual Carnation 'J. B. Stevenson,' from Mr. T. Stevenson, Colham Green, Nurseries, Hillingdon.

AWARDS TO SUNDRIES, 1936.

*Award of Merit.*

"Wilson" Electric Hedge Cutter, sent by Messrs. Lloyds, Letchworth, Herts.

*Commended.*

Pruning saw (fixed type), sent by Messrs. Rolcut, Ltd., 11 Lonsdale Road, N.W. 6.

Talisman cloche, sent by Mr. J. I. Hallett, Easterton, Devizes, Wilts.

# EXTRACTS FROM THE PROCEEDINGS OF THE ROYAL HORTICULTURAL SOCIETY.

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## NOTICES TO FELLOWS.

### SUBSCRIPTIONS.

All Annual Subscriptions are payable in advance on January 1 of each year. Fellows can at any time relieve themselves of any further trouble in the matter, either by compounding by payment of a lump sum for Life Membership, or by obtaining from the Secretary a Banker's Order, instructing their bankers to pay their subscription on January 1 each year.

### CHANGE OF ADDRESS.

Fellows are reminded that it would be of material assistance to the Secretary in dispatching their tickets, plant distribution lists, JOURNAL, or any other communications that may have to be addressed to them, if any change of address or change in bankers through whom their subscriptions are paid is notified to him as soon as possible.

### PLANT DISTRIBUTION.

Lists of seeds and plants available for distribution in 1937, together with the form of application for them, will be distributed with the January JOURNAL. Should by any chance these lists and forms be mislaid, Fellows should notify the Secretary immediately, so that a duplicate set of papers may be sent.

### FORTNIGHTLY SHOW—OPENING HOUR.

In order to give Fellows more opportunity of visiting the fortnightly shows the Council has decided that in 1937 they shall be open to the public at 12 o'clock on the first day, instead of at 1 o'clock as hitherto.

### DATE OF CHELSEA SHOW, 1937.

The Calendar for 1937 has now been fixed, and will appear, as usual, in the January number of the JOURNAL. But in view of the Coronation next year and the fact that many Fellows will be desirous of making early arrangements, it is thought that an early announcement of the date of the Chelsea Show is desirable. This Show will be held on Wednesday, Thursday, and Friday, May 26, 27 and 28. The usual special notices will be sent to all Fellows in due course.

### OTHER SPECIAL EVENTS IN 1937.

Annual Meeting, February 23.  
Daffodil Show, April 15 and 16.  
Early Market Produce Show, April 15 and 16.  
Great Autumn Show at Olympia, September 29 and 30 and October 1.  
Fruit and Vegetable Show, October 12 and 13.

(Attention is drawn to the date of the Fruit and Vegetable Show announced in the November JOURNAL for October 7 and 8, 1937. The date has been changed.)

### CALENDAR.

December 8, 1-5 P.M. Fortnightly Meeting and Show of flowers in season.  
December 9 and 10, from 2-4 P.M. Practical Demonstration at Wisley (weather permitting) on the pruning of fruit trees (see special notice, p. cxc).

## CXC PROCEEDINGS OF THE ROYAL HORTICULTURAL SOCIETY.

*January 12, 12-5 P.M.* Fortnightly Meeting and Show of flowers in season.

The Lecture in the afternoon at 3.30 in the Lecture Room of the New Hall will be given under the auspices of the Institute of Landscape Architects, when the subject is to be "The Coronation Planting Scheme." Any Fellows interested in this subject will be welcome at the Lecture.

*January 26, 12-5 P.M.* Fortnightly meeting and Show of flowers in season.

At 3.30 P.M. in the Lecture Room of the New Hall Mr. A. D. C. LE SUEUR will give a lecture on "Some Troubles of Garden Trees."

### HALL LETTINGS.

On December 2, 3 and 4 a Bird and Aquarium Show will be held in the New Hall. Fellows may remember that a similar Exhibition was staged in our Hall last year, and proved a very interesting one. Particulars may be obtained from the Managing Director, The Marshall Press, Ltd., Milford Lane, Strand, W.C. 2.

On January 6 and 7, 1937, a Pigeon Show will be held in the New Hall. Particulars may be obtained from the organizer, Mr. W. F. HOLMES, The Thatched House, Hampton Wick. Fellows are cordially invited. R.H.S. Tickets admit.

### PRACTICAL DEMONSTRATIONS.

A demonstration on the pruning of fruit trees will be given at Wisley on December 9 and 10 from 2 to 4 P.M., weather permitting. Fellows who intend to be present at this demonstration are asked to inform the Director, R.H.S. Gardens, Wisley, Ripley, Surrey, beforehand, mentioning on which day they will attend, in order that adequate arrangements may be made.

### PICTURES, PLANS, PHOTOGRAPHS, ETC.

During the winter space will be available at Fortnightly Shows for pictures and photographs of plants, flowers, gardens and plans or models of gardens. Regulations with regard to these exhibits may be had on application to the Secretary. The dates of the Shows during this winter are December 8, 1936 and January 12 and 26, February 9 and 23, 1937.

### HORTICULTURAL EXAMINATIONS.

Intending candidates for the Society's 1937 examinations are reminded that the syllabus, giving the dates for next year's examinations and entry forms, may now be obtained from the Society's Offices.

### PUBLICATIONS.

#### *Daffodil Year Book.*

The Daffodil Year Book for 1936 is now available upon application to the Secretary, the price being 5s. in limp cover, and 6s. in stiff cover.

#### *Lily Year Book.*

The Lily Year Book for 1936 may be obtained upon application to the Secretary, price 5s. in limp cover, 6s. in stiff cover.

#### *Rock Gardens and Rock Plants.*

"Rock Gardens and Rock Plants," being the Report of the Conference on Alpine Plants held in 1936, has also been published and is available at 6s. a copy. This report is recommended as giving a great deal of information on rock gardening and the growing of rock plants.

#### *R.H.S. Diary, 1937.*

The R.H.S. Diary has now appeared for the twenty-sixth year, and it is pleasing to be able to state that it is the most popular gardeners' diary published. This year's Diary contains, in addition to many notes on different plants, an article on Ferns. The price is 2s. 2d. post free, in Pluviusin with back loop and pencil; 3s. 8d. post free in Morocco leather (not refillable) with pencil; or 5s. 2d. post free in refillable Crocodile Case with card and stamp pockets.

Fellows are asked particularly to note the Errata slip in the Diary which calls attention to the fact that:

- (1) The date of the Fruit and Vegetable Show has been changed from October 7 and 8 to October 12 and 13, 1937.
- (2) The R.H.S. Fortnightly Shows will open at 12 o'clock instead of 1 o'clock as printed.

The attention of Fellows is called to two recent books published by the Society containing the latest information regarding the cultivation of their respective subjects and on the newest varieties, which should be especially useful for the planting season.

They are :

Apples and Pears : Varieties and Cultivation in 1934. Price 7s. 6d. post free.

Cherries and Soft Fruits : Varieties and Cultivation in 1935. Price 6s. post free.

#### WISLEY IN DECEMBER.

There is still much to see at Wisley, especially on a fine day, even among the collections in the open ground.

In Seven Acres the coloured bark of such genera as *Cornus* and *Salix* provide many shades of red and yellow on their numerous erect or pendulous branches, while the stems of the Birches, *Arbutus* and others all contribute their share to the colour effect, and also to the variety of forms which bare trees provide.

In the Heath garden the first of the winter-flowering Heaths begin to open their flowers. *Erica carnea* and its fine white variety 'Springwood White' stand out conspicuously. The autumn-flowering *Hamamelis virginica* will still be found to carry a few of its yellow flowers, while *H. arborea* will be swelling its buds, to flower a little later. *Viburnum fragrans* begins its long flowering period, which will continue for several months. *Iris unguicularis*, so useful for indoor decoration, will also be producing its lavender-coloured flowers now.

In the Half Hardy plant house bulbous plants will be fast pushing through the soil and there will still be a few of the hybrid *Nerines* in bloom. *Cassia stipulacea* trained upon the roof is a showy plant used in this way and has a long period of flowering. Camellias, Cape Heaths, *Epacris*, *Statice*, *Jasminum primulinum* and some species of *Acacia* will form the chief attractions in the greenhouse.

# GENERAL MEETINGS.

OCTOBER 6, 1936.

Mr. C. G. A. NIX, V.M.H., in the Chair. (See p. 493.)

A lecture was given by Mr. F. J. ROSE on "Grapes for the Small Garden."

**FRUIT AND VEGETABLE COMMITTEE.**—Mr. E. A. BUNYARD, F.L.S., and Mr. C. G. A. NIX in the Chair, and twenty-seven other members present.

## Awards Recommended :—

### *Silver-gilt Hogg Medal.*

To Messrs. Allgrove, Langley, Slough, for collection of fruit.

To Barnham Nurseries, Barnham, Sussex, for collection of fruit.

To University of Reading, Reading, for collection of fruit.

To Messrs. T. Rivers and Son, Sawbridgeworth, Herts, for collection of fruit.

To Messrs. Laxton Bros., Bedford, for collection of fruit.

To Messrs. Bunyard, Maidstone, for collection of fruit.

### *Silver Hogg Medal.*

To Messrs. Daniel Bros., Norwich, for collection of fruit.

To Messrs. John Waterer, Sons & Crisp, Twyford, Berks, for collection of fruit.

To Messrs. Cheal, Crawley, Sussex, for collection of fruit.

### *Hogg Medal.*

To Messrs. Pennells, Lincoln, for collection of fruit.

To Messrs. Hopwood, Cheltenham, for collection of fruit.

To the Army Vocational Training Centre, Chisledon, Wilts, for collection of fruit.

To Swanley Horticultural College, Swanley, for collection of fruit.

### *Silver Knightian Medal.*

To Messrs. Sutton, Reading, for collection of Onions.

To Messrs. Dobbie, Edinburgh, for collection of Potatos.

## Other Exhibits.

R.H.S. Commercial Fruit Trials, Wisley : collection of new Apples.

Messrs. Seabrook, Boreham, Chelmsford : collection of new Apples.

Messrs. Laxton Bros., Bedford : Plums 'Laxton's Unique,' and 'Laxton's Rearguard.'

Mr. W. Hiscocks, Homelands, Keswick Road, Fetcham, Leatherhead : Apple 'Fetcham Seedling.'

Mr. C. E. Camp, 13 Mansfield Road, Quorn, Loughborough, Leicester : seedling Apple.

Mr. W. J. Smith, 136 King's Road, Chelmsford : seedling Apple.

Mr. Graham Smith, Forvie, Hills Road, Cherryinton, Cambridge : collection of *Malus Neidzwetzkyana* seedlings.

Mr. W. Hageman, 51 Beauchamp Road, London, S.E. 19 : seedling Apple.

Mr. A. Falconer, Stamford Park, Stalybridge : Celery 'White Plume,' 'Stamford Park Pink'; Brussels Sprouts 'Clibran's Masterpiece.'

Mr. C. H. Walkden, 8 Cecil Place, Mitcham : Apple 'Mitcham Wonder.'

Mr. W. E. Sands, Mourne View, Lisburn, Northern Ireland : Tomatos 'Sand's Garvey Star' and 'Sand's Alice.'

OCTOBER 6-7, 1936.

## FRUIT AND VEGETABLE SHOW.

### CHIEF AWARDS IN THE COMPETITIVE CLASSES FOR FRUIT AND VEGETABLES.

#### FRUIT.

*The Gordon-Lennox Cup*, for the most meritorious display of fruit staged by an amateur.

To Rt. Hon. Lord Swaythling, Southampton (gr. Mr. F. J. Rose).

*The George Monro Memorial Challenge Cup*, for the best exhibit of Grapes staged by an amateur.

To Rt. Hon. the Earl of Strathmore, Glamis (gr. Mr. D. McInnes).



- The Affiliated Societies Challenge Cup*, for the best exhibit of fruit staged by an Affiliated Society.  
To the Limsfield, Oxted and District Horticultural Society.
- Class 1.*—Collection of nine dishes of ripe dessert fruit.  
*First Prize, Silver Hogg Medal and £8.*  
To Rt. Hon. Lord Swaythling, Southampton (gr. Mr. F. J. Rose).
- Class 2.*—Collection of six dishes of ripe dessert fruit.  
*First Prize, Silver Hogg Medal and £5.*  
To Rt. Hon. Lord Belper, Kingston Hall, Derby (gr. Mr. L. C. Rowe).
- Class 3.*—Collection of eight bunches of Grapes.  
*First Prize, Silver Hogg Medal and £12.*  
To Rt. Hon. the Earl of Strathmore, Glamis (gr. Mr. D. McInnes).
- Class 4.*—Collection of four bunches of Grapes.  
*First Prize, Silver Hogg Medal and £5.*  
To Rt. Hon. Lord Swaythling, Southampton (gr. Mr. F. J. Rose).
- Class 19.*—Collection of twenty-four dishes of hardy fruits.  
*First Prize, Silver Hogg Medal and £12.*  
To Lieut.-Colonel Sir Randolph Baker, Bt., Blandford (gr. Mr. A. E. Usher).
- Class 20.*—Collection of twelve dessert varieties of Apples.  
*First Prize, Fruiterers Company's Silver-gilt Medal and £5.*  
To N. G. Chalmers-Hunt, Esq., Gamels Hall, Hertford.
- Class 21.*—Collection of twelve culinary varieties of Apples.  
*First Prize, Fruiterers Company's Silver Medal and £5.*  
To N. G. Chalmers-Hunt, Esq., Gamels Hall, Hertford.
- Class 26.*—Collection of twelve dessert varieties of Pears.  
*First Prize, Silver-gilt Hogg Medal and £5.*  
To Rt. Hon. the Earl of Bessborough, Stansted Park, Hants. (gr. Mr. T. E. Tomalin).
- Class 92.*—Market Growers. Four British standard half-boxes of 'Cox's Orange Pippin' Apples.  
*First Prize, Silver Hogg Medal and £4.*  
To Mr. R. J. Burrell, Bury St. Edmunds.
- Class 93.*—Market Growers. Four British standard half-boxes of 'Worcester Pearmain' Apples.  
*First Prize, Silver Hogg Medal and £4.*  
To the Reading University, Reading.
- Class 94.*—Market Growers. Four British standard half-boxes of any dessert variety of Apple other than 'Cox's Orange Pippin' or 'Worcester Pearmain.'  
*First Prize, Silver Hogg Medal and £4.*  
To Messrs. John Waterer, Sons & Crisp, Twyford.
- Class 95.*—Market Growers. Four British standard boxes of 'Bramley's Seedling' Apple.  
*First Prize, Silver Hogg Medal and £4.*  
To Mr. T. Neame, Faversham.
- Class 96.*—Market Growers. Four British standard boxes of any culinary variety of Apple other than 'Bramley's Seedling.'  
*First Prize, Silver Hogg Medal and £4.*  
To Messrs. John Waterer, Sons & Crisp, Twyford.
- Class 97.*—Market Growers. Three one-layer boxes of 'Cox's Orange Pippin' Apple.  
*First Prize, Hogg Medal and £2.*  
To Mr. W. H. Maelor-Jones, West Horsley.
- Class 98.*—Market Growers. Three one-layer boxes of any dessert variety of Apple other than 'Cox's Orange Pippin.'  
*First Prize, Hogg Medal and £2.*  
To Messrs. John Waterer, Sons & Crisp, Twyford.
- Class 99.*—Market Growers. One one-layer box of a dessert variety of Apple not offered for sale in a printed catalogue or price-list before 1916.  
*First Prize, Hogg Medal and £1.*  
To Mr. W. H. Smithers, East Preston, Nr. Littlehampton.
- Class 100.*—Market Growers. Three British standard half-boxes of 'Conference' Pears.  
*First Prize, Silver Hogg Medal and £4.*  
To Mr. T. Neame, Faversham.

*Class 101.*—Market Growers. Three one-layer boxes of 'Conference' Pears.

*First Prize, Hogg Medal and £2.*

To Mr. T. Neame, Faversham.

*Class 102.*—Market Growers. Three one-layer boxes of 'Doyenné du Comice' Pears.

*First Prize, Hogg Medal and £2.*

To Mr. T. Neame, Faversham.

*Class 103.*—Market Growers. Three one-layer boxes of any dessert variety of Pear other than 'Conference' or 'Doyenné du Comice.'

*First Prize, Hogg Medal and £2.*

To Messrs. John Waterer, Sons & Crisp, Twyford.

#### VEGETABLES.

*The R.H.S. Vegetable Challenge Cup*, for the highest number of points in the vegetable classes.

To Sir Randolph Baker, Bt., Blandford, Dorset (gr. Mr. A. E. Usher).

*Class 201.*—A table of vegetables.

*First Prize, The Riddell Trophy and £16.*

To Sir Randolph Baker, Bt., Blandford, Dorset (gr. Mr. A. E. Usher).

*Class 202.*—A collection of twelve kinds of vegetables.

*First Prize, The Sutton Cup and £8.*

To Mrs. Peter Adam, Kidderminster (gr. Mr. W. Pugh).

**FLORAL COMMITTEE A.**—Mr. J. M. BRIDGEFORD in the Chair, and fifteen other members present.

#### Awards Recommended :—

##### *Silver Floral Medal.*

To Messrs. McGredy, Portadown, for Roses.

To Messrs. Carter Page, London, for Dahlias.

To Messrs. John Waterer, Sons & Crisp, Twyford, for Michaelmas Daisies and Dahlias.

To Mr. J. T. West, Brentwood, for Dahlias.

##### *Silver Banksian Medal.*

To Messrs. Engelmann, Saffron Walden, for Carnations and Gerberas.

To Messrs. Wood, Taplow, for Michaelmas Daisies.

##### *Flora Medal.*

To Messrs. Allwood, Haywards Heath, for Carnations.

To Messrs. Prins, Wisbech, for Kniphofias.

##### *Banksian Medal.*

To Messrs. Barr, Taplow, for Michaelmas Daisies, etc.

To Messrs. B. R. Cant, Colchester, for Roses.

To Messrs. Kelway, Langport, for Gladioli.

To Mr. A. Miles, Bickley, for Michaelmas Daisies.

To Messrs. Wheatcroft, Nottingham, for Roses.

The following awards to Perennial Asters were recommended after trial at Wisley :

##### *First-class Certificate.*

To Aster 'Pink Nymph' from Messrs. Wood, Taplow. See p. 517.

##### *Award of Merit.*

To Aster 'Audrey Tanner,' raised at the R.H.S. Gardens, Wisley. See p. 517.

To Aster 'Beechwood Challenger,' sent by Messrs. Wood, Taplow. See p. 517.

To Aster 'F. R. Durham,' sent by Messrs. Barr, Taplow. See p. 517.

To Aster 'H. Harrow,' raised at the R.H.S. Gardens, Wisley. See p. 517.

To Aster 'Mrs. Pierpont Morgan,' sent by the late Hon. Vicary Gibbs, Elstree. See p. 517.

To Aster 'Preziosa,' sent by Messrs. Barr, Taplow. See p. 517.

##### *Highly Commended.*

To Aster 'Kathleen Chilman,' raised at the R.H.S. Gardens, Wisley. See p. 517.

**Other Exhibits.**

Messrs. Barr, Taplow : dwarf Perennial Asters.  
 Messrs. Clark, Dover : shrubs and herbaceous plants.

**FLORAL COMMITTEE B.**—Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and twelve other members present.

**Awards Recommended :—***Flora Medal.*

To Messrs. Russell, Windlesham, for Clematis, Vitis and other shrubs.  
 To Messrs. John Waterer, Sons & Crisp, Bagshot, for berried and foliage shrubs.

*Banksian Medal.*

To Messrs. Burkwood & Skipwith, Kingston-on-Thames, for flowering and berried shrubs.

To Messrs. Hemsley, Crawley, for berried and foliage shrubs.  
 To Messrs. Stewart, Ferndown, for berried and foliage shrubs.

**Other Exhibits.**

The Director, Oxford Botanic Garden : *Malus Ringo*.  
 Messrs. John Waterer, Sons & Crisp, Bagshot : *Berberis* 'Coral Gem,' *Malus* 'October Glory.'

**ORCHID COMMITTEE.**—Sir JEREMIAH COLMAN, Bt., in the Chair, and eight other members present.

**Award Recommended :—***Award of Merit.*

To *Laeliocattleya* × 'Mrs. Medo' var. 'Bronze Queen' (C. × 'Venus' × L.-c. × *luminosa*) (votes unanimous), from Messrs. McBean, Cooksbridge. See p. 518.

**Other Exhibit.**

Messrs. McBean : group of Orchids.

**JOINT DAHLIA COMMITTEE.**—Mr. T. HAY, V.M.H., M.V.O., in the Chair, and seven other members present.

*Selected for trial at Wisley.*

'Gold Rush' (to be renamed) (Charm), 'Heroine' (Small Dec.), 'Primrose' (Small Dec.).

OCTOBER 13, 1936.

The Lord ABERCONWAY, C.B.E., V.M.H., in the Chair.

A lecture was given by Mons. G. Truffaut on "Soil Science Progress applied to Horticulture."

**SCIENTIFIC COMMITTEE.**—Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and eight other members present.

*Beetles on Epilobium.*—Mr. Marsden-Jones showed examples of a Chrysomelid beetle which had attacked the hybrid *Epilobiums* shown by him at the last meeting, and many of the plants had died. Mr. Wilson took the specimens of both plants and beetles for further examination (p. cxcvii).

*New insect on Rhododendrons.*—Mr. G. F. Wilson showed specimens of a newly discovered insect on *Rhododendrons*. It is a Jassid bug, native of North America, where it feeds on a large variety of plants, and is called *Graphocephala coccinea*. It is beautifully coloured, rather slender, and occurred at Chobham in considerable numbers. No ill-effects followed its feeding as a rule, but in some instances bacteria had entered the leaves which had been punctured and caused a considerable amount of rot.

*Fruit of Trachelospermum jasminoides.*—Mr. Cromar Watt sent fruits of *Trachelospermum jasminoides* from his garden in Aberdeenshire to draw attention to the curious way in which the two carpels remain attached to one another at their apex so that the immature fruit forms a ring. When ripe they separate at a touch and straighten out, a means in all probability of assisting seed distribution.

*Fasciated Banana.*—Mr. H. J. Holman of the Imperial Institute sent a Banana which through fasciation appeared to consist of three fruits which had not separated. Fasciation in Bananas involving two fruits is not rare, but no member of the Committee had seen an example in which three were involved.

**FRUIT AND VEGETABLE COMMITTEE.**—Mr. E. A. BUNYARD, F.L.S., in the Chair, and six other members present.

**Exhibits.**

- Messrs. Bunyard, Maidstone : collection of fruit, and seedling Apple.  
R.H.S. Commercial Fruit Trials, Wisley : collection of new Apples on trial.  
Sir Arthur Hill, Royal Gardens, Kew : collection of Apples.  
Messrs. Sutton, Reading : collection of Onions.  
Mr. F. J. Lansdell, The Knap, Coombe Vale, Saltdean, Brighton : Apple 'Ruth Lansdell.'  
Mr. L. Evan Thomas, Pencerrig, Builth, Breconshire : seedling Apple.  
Mr. W. H. Divers, Westdean, Hook, nr. Surbiton : Apples 'Rival' and 'Golden Winter Pearmain.'  
Mr. F. Fletcher, Rosemary Lane, Freshford, nr. Bath : seedling Apple.  
Miss M. E. Dorrington, Pinecote, Gerrards Cross, Bucks. : seedling Apple.  
Miss G. Collins, Winslade Cottage, Sidmouth : seedling Apple.  
Miss C. S. Layard, Kingsmere, 16 Grand Avenue, Southbourne, Bournemouth : seedling Apple.  
Miss E. Gray, 14 St. John's Road, Poole, Dorset : seedling Apples.

**FLORAL COMMITTEE A.**—Mr. J. M. BRIDGEFORD in the Chair, and fifteen other members present.

**Awards Recommended :—**

*Silver Flora Medal.*

To Messrs. Allwood, Haywards Heath, for Carnations.

*Silver Banksian Medal.*

To Messrs. Engelmann, Saffron Walden, for Carnations.

To Messrs. Kelway, Langport, for Gladioli.

To Messrs. Prior, Colchester, for Roses.

To Messrs. Spencer, Hockley, for Dahlias.

To Messrs. Vinten, Balcombe, for Chrysanthemums.

*Flora Medal.*

To Messrs. Barr, Taplow, for Michaelmas Daisies, Nerines, etc.

To Messrs. B. R. Cant, Colchester, for Roses.

To Mr. F. Ley, Windlesham, for Roses.

To Messrs. Luxford, Sawbridgeworth, for Chrysanthemums.

To Messrs. Prince, Longworth, for Roses.

To Mr. Wells, jun., Merstham, for Michaelmas Daisies and hardy Korean Chrysanthemums.

*Banksian Medal.*

To Messrs. Bentall, Havering, for Roses.

To Messrs. Dobbie, Edinburgh, for Michaelmas Daisies.

To Mr. T. Selwyn Hughes, Great Missenden, for Chrysanthemums.

To Messrs. S. Low, Enfield, for Carnations.

To Mr. S. Ogg, Swanley, for Dahlias.

To Mr. W. Yandell, Maidenhead, for Chrysanthemums.

*Award of Merit.*

To Isotydaea × 'Alpha,' as a greenhouse pot plant (votes unanimous), from Major W. Van de Weyer, Dorchester. See p. 518.

To Isotydaea × 'Gamma,' as a greenhouse pot plant (votes 12 for, 3 against), from Major W. Van de Weyer, Dorchester. See p. 518.

**Other Exhibits.**

Misses Allen-Brown, Henfield : Violets and Carnations.

Mr. W. E. B. Archer and Daughter, Sellindge : Roses.

Messrs. Clark, Dover : herbaceous plants.

Misses Hopkins, Coulsdon : herbaceous plants.

Mr. H. Lowe, Tibshelf : Chrysanthemum 'Desert Gold.'

Mr. J. Maker, Hampton : Chrysanthemum 'Pink Ideal' (to be seen again).

Miss R. Tolson, Ripon : Michaelmas Daisy seedling.

Messrs. Wheatcroft, Nottingham : Roses.

**FLORAL COMMITTEE B.**—Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and eighteen other members present.

**Awards Recommended :—**

*Silver Banksian Medal.*

To Messrs. Cheal, Crawley, for berried and foliage shrubs.

*Flora Medal.*

- To Donard Nursery, Newcastle, Co. Down, for berried and foliage shrubs.  
 To Messrs. Hillier, Winchester, for berried and foliage shrubs.  
 To Mr. E. Ladhams, Elstead, for shrubs and herbaceous plants.  
 To Messrs. Reuthe, Keston, for berried and foliage shrubs.  
 To Messrs. Russell, Windlesham, for Clematis, Vitis and other shrubs.  
 To Messrs. John Waterer, Sons & Crisp, Bagshot, for clipped Yew trees.

*Banksian Medal.*

- To Messrs. Hemsley, Crawley, for berried and foliage shrubs.  
 To Hocker Edge Gardens, Cranbrook, for Gentians, Crocuses and other bulbous plants.  
 To Mr. J. J. Klinkert, Richmond, for clipped Box trees.  
 To Messrs. Maxwell & Beale, Broadstone, for hardy Heaths.

**Other Exhibits.**

- Mr. A. Corderoy, Eltham : rock garden plants.  
 Donard Nursery Co., Newcastle, Co. Down : *Cupressus macrocarpa* 'Donard Gold,' *Guevina Avellana*, *Pittosporum Mayi* var. *tricolor*.  
 Lady Brodie Henderson, Braughing : *Pamianthe peruviana*.  
 Edward Howarth, Esq., C.B., C.B.E., Kirdford : *Escallonia montevidensis*, *Viburnum Opulus* var. *xanthocarpum*, *Hamamelis virginiana*.  
 The Earl of Ilchester, Weymouth : *Hydrangea Hemsleyana*, *Cytisus linifolius*.  
 Collingwood Ingram, Esq., Benenden : *Malus baccata* var. *mandshurica*.  
 Messrs. Redgrove & Patrick, Sevenoaks : hardy plants.  
 C. G. Rogers, Esq., Etchingham : *Kniphofia Rogersii*.  
 Lionel de Rothschild, Esq., Exbury : *Rudbeckia fulgida*.  
 Messrs. Russell, Windlesham : *Medinilla rubicunda*.  
 Mr. R. Colpoys Wood, West Drayton : shrubs.

**ORCHID COMMITTEE.**—Sir JEREMIAH COLMAN, Bt., in the Chair, and thirteen other members present.

**Awards Recommended :—***Award of Merit.*

- To *Cypripedium* × 'Aigrette,' Exbury var. (*insigne* × 'Phantasy') (votes unanimous), from Lionel de Rothschild, Esq., Exbury, Southampton. See p. 517.  
 To *Brassocattleya* × 'Westminster' var. 'Paeony' (*B.-c.* × 'Dr. G. McDonald' × *Cattleya* × 'Tityus') (votes 9 for, 1 against), from N. Prinsep, Esq., The Boxes, Pevensey Bay, Sussex. See p. 517.

*Cultural Commendation.*

- To Mr. A. Battrick, gr. to A. R. Jackson, Esq., Millfield, Chislehurst, for a large plant of *Cattleya Loddigesii* bearing numerous flowers.

**Other Exhibits.**

- Messrs. Charlesworth, Haywards Heath : a group of Orchids.  
 Messrs. Stuart Low, Jarvis Brook : a group of Orchids.  
 A. R. Jackson, Esq., Millfield, Chislehurst : several plants of *Oncidium crispum*.

**JOINT DAHLIA COMMITTEE.**—Mr. T. HAY, V.M.H., M.V.O., in the Chair, and five other members present.

No Dahlias were selected for trial at Wisley on this occasion.

Dahlias were submitted by Mr. W. C. Thompson, Newcastle-on-Tyne.

OCTOBER 27, 1936.

Sir DANIEL HALL, K.C.B., LL.D., D.Sc., F.R.S., V.M.H., in the Chair.

The First Masters Memorial Lecture was given by Dr. R. N. SALAMAN, F.R.S., M.D., M.A., on "The Potato in its Early Home and its Introduction into Europe."

**SCIENTIFIC COMMITTEE.**—Mr. E. A. BOWLES, M.A., F.L.S., V.M.H., in the Chair, and seven other members present, and Mr. Langley Smith, visitor.

*Beetles on Epilobium.*—Mr. G. F. Wilson reported that the beetles attacking *Epilobium* shown at the last meeting were species of *Halitica*, one specimen was *H. lythri*, the others were not identifiable with certainty but were probably *H. pusilla* (p. cxcv).

## CXCXVIII PROCEEDINGS OF THE ROYAL HORTICULTURAL SOCIETY.

*Scented Pelargoniums*.—Mr. Langley Smith showed a series of leaves from crosses of scented *Pelargoniums* which he had made. He found that the scent of the hybrid was usually intermediate between that of its parents, particularly noticeable in *Pelargonium tomentosum* crosses. The form of the leaf was also more or less intermediate as a rule. The hybrids were for the most part sterile, the stamens being particularly affected.

*Virescent Chickweed*.—Dr. Barnes showed examples of virescence in the flowers of Chickweed (*Stellaria media*). In such flowers there was rarely any pollen and the ovules were not developed. He had found a similar state of affairs in *Anagallis caerulea*. He thought the condition due to a check followed by a period of wet weather.

**FRUIT AND VEGETABLE COMMITTEE.**—Mr. E. A. BUNYARD, F.L.S., in the Chair, and thirteen other members present.

### Awards Recommended :—

*Silver-gilt Hogg Medal.*

To Messrs. Allgrove, Middle Green, Langley, Slough, for collection of Apples.

*Silver Hogg Medal.*

To Messrs. Laxton Bros., Bedford, for collection of Apples, Pears and Nuts.

### Other Exhibits.

John Innes Horticultural Institute, Mostyn Road, Merton Park, S.W. 19 : collection of seedling Apples.

R.H.S. Commercial Fruit Trials, Wisley : Apples 'Millicent Barnes' and 'A. W. Barnes,' Pear 'Belle Guerandaise.'

Messrs. Laxton Bros., Bedford ; Pear 'Laxton's Record.'

Mr. A. R. Allan, St. Swithin's, Dorking : Grape 'Strawberry.'

Mrs. Lewis, Sanoma, Abbots Leigh, Bristol : Apple, 'Mrs. Lakeman's Seedling.'

Miss E. C. Montizambert, Little Croft, Mortimer, Berks : seedling Apple.

Mr. G. H. Phipps, 11 Albert Road, Evesham : seedling Apple.

Mr. A. W. Bass, High Street, West Wycombe, Bucks : seedling Apples.

Mr. J. Goodsell, Mount Le Hoe Farm, Benenden, Kent : Apple 'Endeavour.'

Mr. T. C. Laws, Kirk Ella, Batchworth Hill, Rickmansworth : seedling Apple.

Mr. T. E. Tomalin, Stansted Park, Rowlands Castle, Hants : Apple 'Red King of the Pippins,' Guava (*Psidium Cattleianum*).

**FLORAL COMMITTEE A.**—Mr. J. M. BRIDGEFORD in the Chair, and eighteen other members present.

### Awards Recommended :—

*Gold Medal.*

To Messrs. Sutton, Reading, for Cyclamen.

*Silver Flora Medal.*

To Messrs. Allwood, Haywards Heath, for Carnations.

To Messrs. Engelmann, Saffron Walden, for Carnations.

To Messrs. Lawrence, Chatham, for Chrysanthemums.

*Silver Banksian Medal.*

To Messrs. Vinten, Balcombe, for Chrysanthemums.

*Flora Medal.*

To Ashington Nurseries, Ashington, for Chrysanthemums and Carnations.

To Messrs. Barr, London, for Nerines and Michaelmas Daisies.

To Messrs. Low, Enfield, for Carnations.

To Messrs. Spencer, Hockley, for Dahlias.

*Banksian Medal.*

To Colesbourne Gardens, Cheltenham, for Nerines.

To Messrs. Eveleens, Aalsmeer, Holland, for Cyclamen.

To Messrs. Gill, Penryn, for Anemones.

To Mrs. S. Ogg, Swanley, for Dahlias.

To Mr. W. Yandell, Maidenhead, for Chrysanthemums.

### Other Exhibits.

Col. H. C. Elwes, M.V.O., D.S.O., Cheltenham : *Nerine Bowdenii* hybrid.

Mr. H. A. Greenslade, Tunbridge Wells : Chrysanthemum 'Autumn Fairy.'

Mr. C. H. Kettle, Corfe Mullen : Violets.

Mr. Wells, jun., Merstham : Chrysanthemums.

Mr. J. T. West, Brentwood : Dahlias 'Lady Huntingfield' and 'Peaceful' (previously selected for trial at Wisley by the Joint Dahlia Committee).

**FLORAL COMMITTEE B.**—Mr. C. T. MUSGRAVE, V.M.H., in the Chair, and eighteen other members present.

**Awards Recommended :—**

*Gold Medal.*

To Lady Beit, Welwyn, for *Codiaeums*, *Dracaenas* and other stove plants.

*Silver-gilt Banksian Medal.*

To Messrs. John Waterer, Sons & Crisp, Bagshot, for ornamental trees and shrubs.

*Silver Flora Medal.*

To Messrs. Cheal, Crawley, for ornamental trees and shrubs.

To Messrs. Gill, Falmouth, for *Rhododendrons*.

To Messrs. Hillier, Winchester, for ornamental trees and shrubs.

*Silver Banksian Medal.*

To Mr. W. J. Marchant, Wimborne, for shrubs.

To Mr. R. C. Notcutt, Woodbridge, for ornamental trees and shrubs.

To Messrs. Russell, Windlesham, for ornamental trees and shrubs.

To Messrs. Stewart, Ferndown, for shrubs and hardy plants.

To Messrs. Wood, Taplow, for ornamental trees and shrubs.

*Flora Medal.*

To Knap Hill Nursery, Woking, for ornamental trees and shrubs.

To Mr. E. Ladhams, Elstead, for shrubs.

*Banksian Medal.*

To Messrs. Burkwood & Skipwith, Kingston, for shrubs.

To Mr. J. Klinkert, Richmond, for clipped Box trees.

To Messrs. Maxwell & Beale, Broadstone, for shrubs.

To Messrs. Scott, Merriott, for shrubs.

*Award of Merit.*

To *Disanthus cercidifolia* as an ornamental foliaged shrub (votes unanimous), from Mr. W. J. Marchant, Wimborne. See p. 518.

To *Exacum affine* as a flowering plant for the cool greenhouse (votes unanimous), from Mr. Alfred Dawkins, Chelsea. See p. 518.

To *Oxalis variabilis* as a flowering plant for the cool greenhouse (votes unanimous), from Mrs. H. A. Milford, Chedworth. See p. 518. This award was recommended, subject to verification of name, on September 29, 1936, and is now confirmed.

To *Petrea volubilis* as a flowering plant for the greenhouse (votes 13 for, 1 against), from Sir John F. Ramsden, Bt., Gerrards Cross. See p. 519.

To *Viburnum dilatatum* var. *xanthocarpum* as an ornamental fruiting shrub (votes unanimous), from Collingwood Ingram, Esq., Benenden. See p. 519. This award was recommended, subject to naming, on October 13, 1936, and is now confirmed.

**Other Exhibits.**

Mrs. Charrington, Eden Bridge : *Lupinus luteus*.

Messrs. Clark, Dover : shrubs and hardy plants.

A. J. Cobb, Esq., Reading : *Berberis* hybrids (*B. Gagnepainii* × *B. verruculosa* ?).

Mr. A. Corderoy, Eltham : rock plants.

Messrs. Garways, London, W.C. 1 : succulents.

Messrs. Kelway, Langport : shrubs.

Mr. W. J. Marchant, Wimborne : *Aronia arbutifolia erecta*, *Cotoneaster rotundifolia*.

Lieut.-Colonel L. C. R. Messel, O.B.E., Handcross : *Malus* 'Nymans.'

Mrs. H. A. Milford, Chedworth : *Pelargonium* sp., near *P. triste*.

Owermoigne Nurseries, Dorchester : shrubs and hardy plants.

Mr. Amos Perry, Enfield : varieties of *Physalis*.

Messrs. Redgrove & Patrick, Sevenoaks : shrubs.

Lionel de Rothschild, Esq., Exbury : *Berberis* sp. Forrest 19521.

Messrs. Rogers, Southampton : rock garden plants.

Messrs. Simmonds, Kings Langley : *Cotoneaster hybrida pendula*.

Messrs. Slocock, Woking : *Malus* 'Goldsworth Red.'

The Director, R.H.S. Gardens, Wisley : *Berberis* species and hybrids.

Mr. R. Colpoys Wood, West Drayton : clipped Box trees.

**ORCHID COMMITTEE.**—F. J. HANBURY, Esq., in the Chair, and 17 other members present.

**Awards Recommended :—**

*Award of Merit.*

To *Cypripedium* × 'Ambition' var. 'Gog' (*Fairrieanum* × 'Gwen Hannen') (votes 12 for, 2 against), from Lionel de Rothschild, Esq., Exbury, Southampton.

CC PROCEEDINGS OF THE ROYAL HORTICULTURAL SOCIETY.

*Silver-gilt Flora Medal.*

To Messrs. Charlesworth, Haywards Heath, for a group.

*Silver-gilt Banksian Medal.*

To Messrs. Sanders, St. Albans, for a group.

To Messrs. McBean, Cooksbridge, for a group.

*Silver Flora Medal.*

To Sir Jeremiah Colman, Bart., Gatton Park, Surrey, for a group.

*Silver Banksian Medal.*

To Messrs. H. G. Alexander, Tetbury, for a group.

To Messrs. Stuart Low, Jarvis Brook, for a group.

To Messrs. Black & Flory, Slough, for a group.

*Banksian Medal.*

To Messrs. Harry Dixon, Wandsworth Common, for a group.



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ERRATA AND CORRIGENDA.

- P. 11, line 16, for Besast, read Besant.  
 P. 106, line 34, for *Coomberi*, read *Comberi*.  
 P. 136, line 36, for *Sonatina*, read *Sonatine*.  
 P. 226, line 16, for *quercifolium*, read *quercifolia*.  
 P. 254, line 26, for 1935, read 1936.  
 P. 324, line 21, for *Soulei*, read *Souliei*.  
 P. 343, line 25, for *Bouchard*, read *Bouchaud*.  
 P. 364, line 10, for *Tinaria*, read *Linaria*.  
 P. 364, line 16, for *Totus*, read *Lotus*.  
 P. 378, line 13, for *Genista linifolius*, read *Genista linifolia*.  
 P. 380, line 34, for save, read sever.  
 P. 384, line 14, for  $\gamma$ -naphthalene acetic acid, read  $\alpha$ -naphthalene acetic acid.  
 P. 396. The name 'Cornish Gilliflower,' attributed to the apple in this note, proves incorrect. The apple has not been identified, but the conclusions regarding pruning trees of the type described, stand.  
 P. 397, fig. 107, for *Phyllostachys*, read *Arundinaria*.  
 P. 415, line 28, for *Choziatovsky*, read *Choziatovskiy*.  
 P. lii, line 58, for *Thomsoni*, read *Thomsonii*.  
 P. xciii, line 45, for *mesaleuca*, read *mesoleuca*.  
 P. cxxix, small exhibits line 15, for *Aquilari*, read *Aguilari*.  
 P. cxli, line 60, for *Tsusophyllum*, read *Tsusiophyllum*.  
 P. clvii, after line 36, insert *Lindley Medal*. To G. Yeld, Esq., V.M.H., for *Hemerocallis*.



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